

# Kitchen Fire Suppression

Testing Inspection and Maintenance

# Agenda

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Willie Jordan

- **Kitchen Hood type**
  - Impact of grease
- **Fire suppression systems that protect the hoods**
  - Design –systems function
  - Discharge – what happens and the components involved
  - Testing Inspection and Maintenance
  - New technology
  - Food trucks

NFPA®



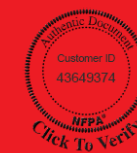
NFPA 90  
NFPA 17

NFPA®

**17A**

Standard for  
Wet Chemical  
Extinguishing Systems

2017



Type One  
Type Two  
Hoods



# Hood Cleaning Schedule

**Table 11.4 Schedule of Inspection for Grease Buildup**

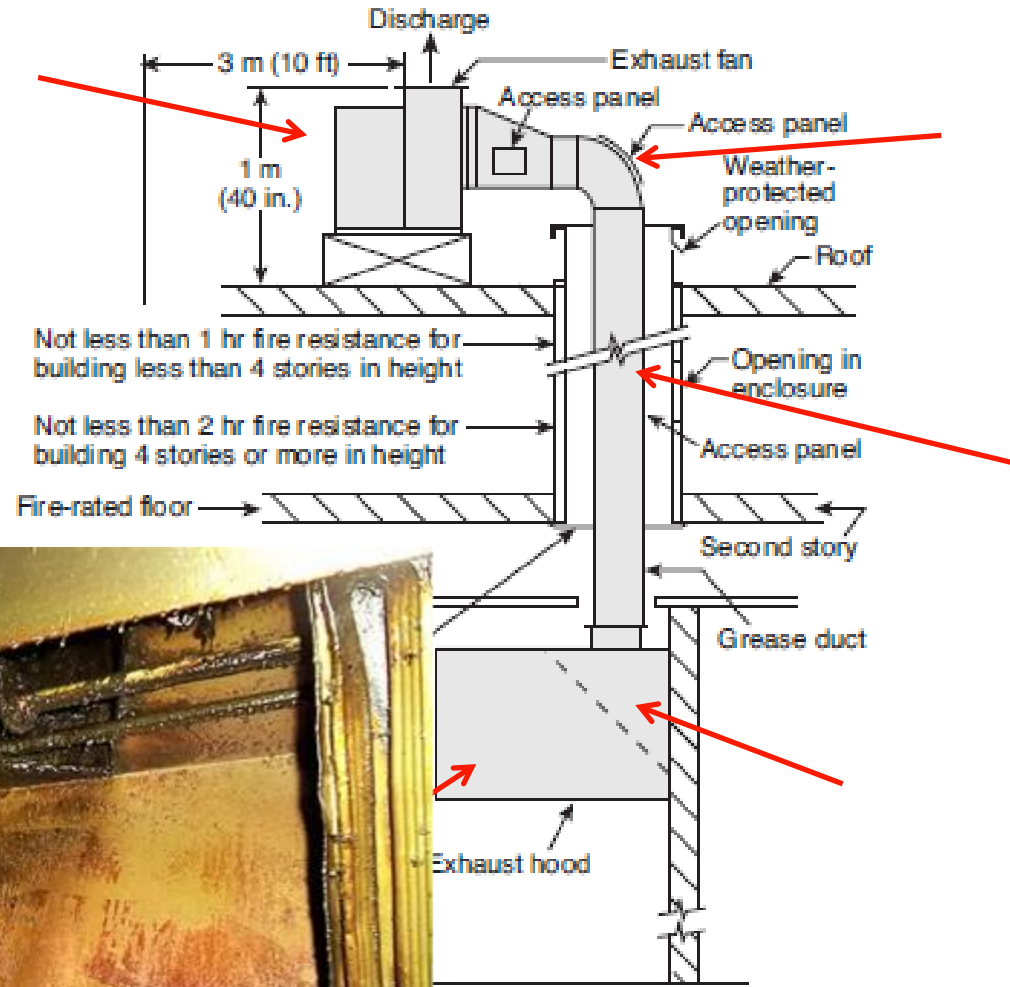
Type or Volume of Cooking	Inspection Frequency
Systems serving <u>solid fuel</u> cooking operations	Monthly
*Systems serving <u>high-volume</u> cooking operations	Quarterly
Systems serving moderate-volume cooking operations	Semiannually
†Systems serving <u>low-volume</u> cooking operations	Annually

\*High-volume cooking operations include 24-hour cooking, charbroiling, and wok cooking.

†Low-volume cooking operations include churches, day camps, seasonal businesses, and senior centers.

## What is cooking Volume?





Section View for Building with Fire-Rated Ceiling and Fire-Rated Floor in Figure A.4.2(a) apply also to

Why does a greasy hood make you cringe?

- The Fire Suppression system is not designed to handle the extra fuel load.
- When a system discharges, the fuel is cut off (electric and gas)
  - Grease is an added fuel that cannot turn off.
- Grease is outside of the coverage area.
- Grease clogs pipe
  - Link line
  - Discharge nozzles





**Here are some examples!**







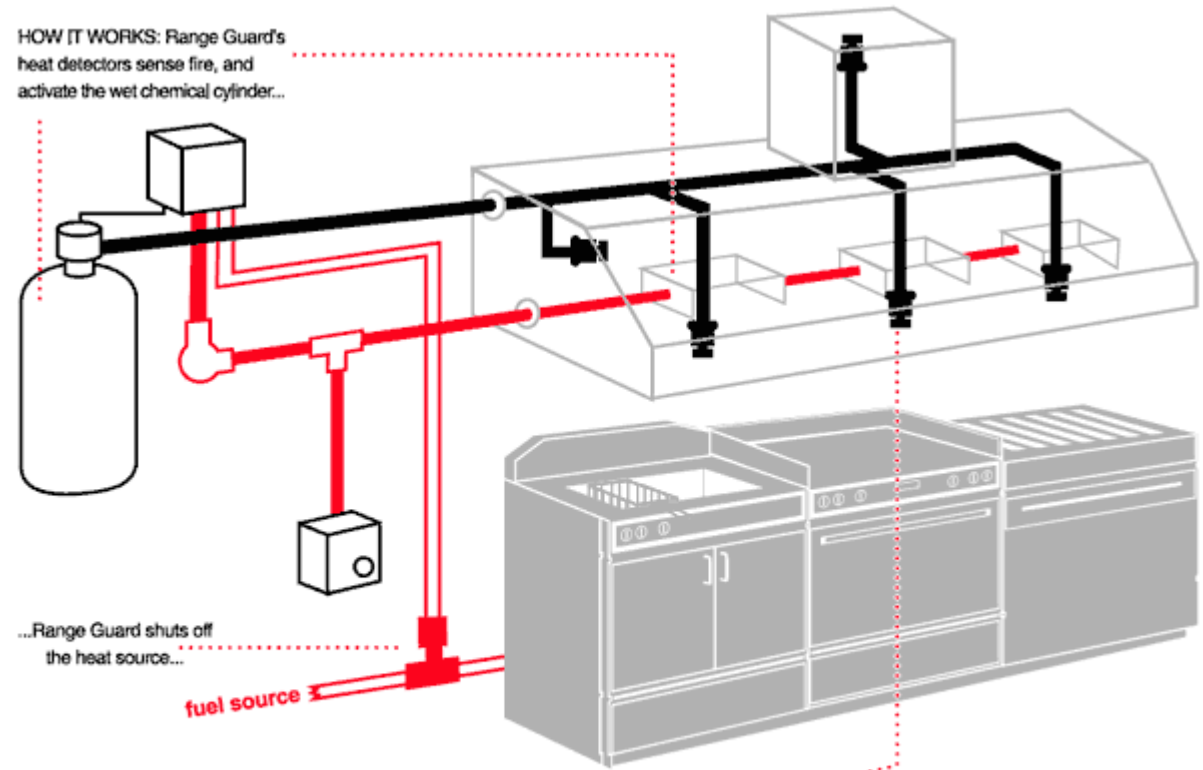


1466992A.



# Kitchen Hood Fire Protection

HOW IT WORKS: Range Guard's heat detectors sense fire, and activate the wet chemical cylinder...



usable link holder (bracket).



Linkage

Fusible link





## Pre-Engineered System

What is a Pre-Engineered system?

- **Pre-Engineered = Pre-Determined**
  - Flow Rates
  - Nozzle Pressure
  - Agent Quantity
- **Specific**
  - pipe size
  - max and min lengths
  - specific fittings & nozzles
  - a limited number of everything.



- Fryer – 1 nozzle with 3 flows **3**
- 40" char broiler – 2 nozzles – 2 flows each **4**
- 36" Range with a shelf – 1F nozzle on the front edge
  - 1 nozzle every 12 inches **3**
- Range with out a shelf – 1 nozzle in the center

**1**

## Pre-Engineered System

What is Pre-Engineered?  
What is a flow  
point?

### Ansul

- 3 gal = 12 flow points
- 1.5 gallon = 6 points

### Fryer

3N = Nozzle has 3 flow points

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### Amerex

- Model 2.75 gal = 8 flow points
- Model 3.75 gal = 11 points
- Model 4.75 gal = 14 points

### Fryer

13729 = Nozzle has 2 flow points



What happens  
when the system  
discharges?

- **Manual - Automatic - Extinguisher**
- **Agent is released**
- **Power is cut**
  - **Electric**
  - **Gas**
- **Fans change state**
- **Notifies the Fire Alarm System**

What happens  
when the system  
discharges?

- **UL300 system is a Wet Chemical System**
- **Saponification**
- **Bubble Blanket**
- **Slower discharge**

What happens  
when the system  
discharges?

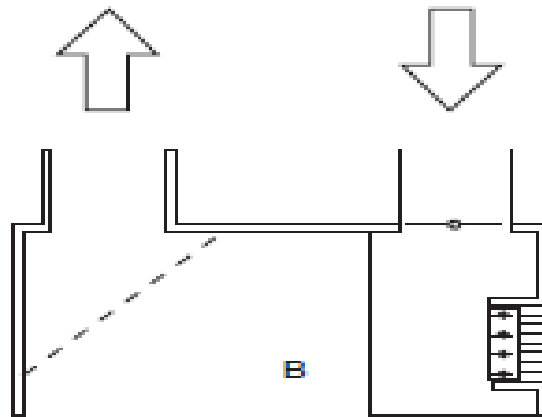
- **Electrical Power - shunt trip breaker**
- **Gas valve closes – Mechanical / Electric**





What happens  
when the system  
discharges?

- Exhaust fan = ON
- Makeup air = OFF
- Night Mode Activation
- Interlocked Controls
- Exhaust Fan heat monitor



What happens  
when the system  
discharges?



# Testing Inspection Maintenance

NFPA 96

**11.2 Inspection, Testing, and Maintenance of Fire-Extinguishing Systems.**

**11.2.1\*** Maintenance of the fire-extinguishing systems and listed exhaust hoods containing a constant or fire-activated water system that is listed to extinguish a fire in the grease removal devices, hood exhaust plenums, and exhaust ducts shall be made by properly trained, qualified, and certified person(s) acceptable to the authority having jurisdiction at least every 6 months.

TIM

A red speech bubble graphic with a white outline, containing the text 'Authorized Service Companies'. The bubble has a tail pointing downwards and to the right.

## Authorized Service Companies

- **Go to the website to see Authorized Manufacture Distributor for your zip code**
  - **Ansul Fire Systems**
  - **Kidde Fire Systems**
  - **Amerex Distributors**
  - **Range Guard**



## Inspection and Maintenance

- Who is responsible for the inspection?
- Actuation and control components shall be tested for proper operation.
- Change the links – note the link dates
- Check the agent
- Check the gauges
- Check the conduit and pipe
- Active signal to the fire alarm panel



Why are links  
changed each  
inspection?

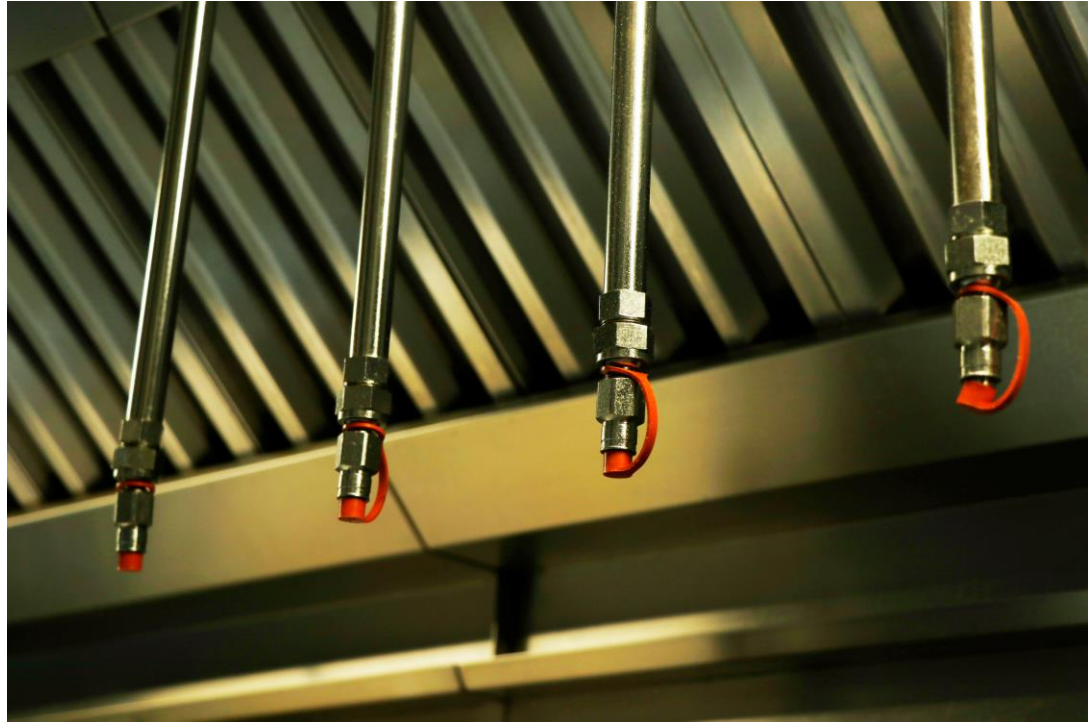
- Links loose their integrity.
- They heat up, they cool down.
- Links are dated.
- Hang the link on the pull station or automan?

Where does the  
pull station go?

- Mounted 10' – 20' from the hood.
- Egress path to the exit
- Toward a lighted exit
- Not behind a stack of boxes

Why do we  
need a nozzle  
caps?

- Grease creeps up and into the pipe.
- Impedes the discharge pattern





What happens if  
you move a  
discharge nozzle?



Hood integrity

We don't like  
holes in hoods?



- Heat rises unless there is a better path!
- What does a gap do for us?
- Missing filters
- Screw hole in the plenum

Who needs to  
be present at  
the final test



**YOU**



What appliances  
do not need  
coverage?

- Non grease laden appliances
  - Steamer
  - Kettle
  - Convection oven
- Rotisserie Oven





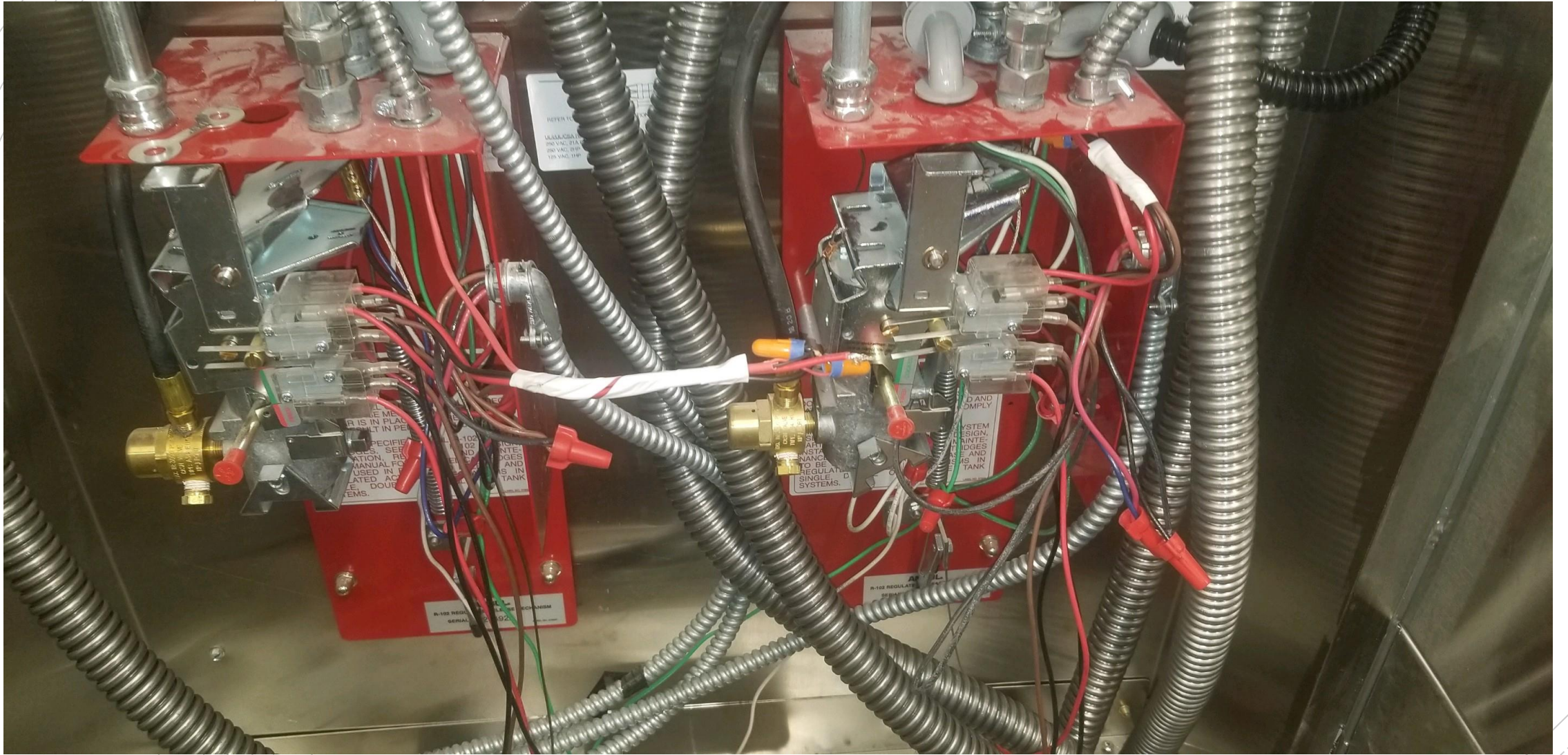
Do all appliances  
need to be under  
the hood?

- All cooking appliance must be under the hood
- Grease lading appliances must be under the hood
- 6" in from the edge









REFER TO  
CLASSIFICATION  
200 VAC, 21A  
200 VAC, 21P  
100 VAC, 11P

IF THE M...  
R IS IN PLAC...  
RESULT IN PE...  
SPECIFIC...  
TION, SEE...  
MANUAL FO...  
USED IN...  
ATED AC...  
E DOUB...  
EMMS.

R-102 REGULATORS  
SERIAL 192

AND COMPLY  
SYSTEM  
DESIGN,  
MINUTE  
RIDGES  
AND  
IS IN  
TANK

R-102 REGULATORS









## ■ Restaurant Electronic Detection

Why do Kitchen  
system put up  
with the greasy  
clogged link lines?



### Key ANSUL® RED Technology components

#### 1. Linear Detection Wire

With multiple temperature ratings in a single hazard area, the linear detection wire accommodates a variety of cooking equipment. It helps minimize the potential for grease buildup and simplifies maintenance.

#### Available temperature ratings

- 155°F / 68°C
- 280°F / 137°C
- 356°F / 180°C
- 500°F / 260°C

Are Food Trucks  
safe?





# Food Truck Fire System Fell Off Wall

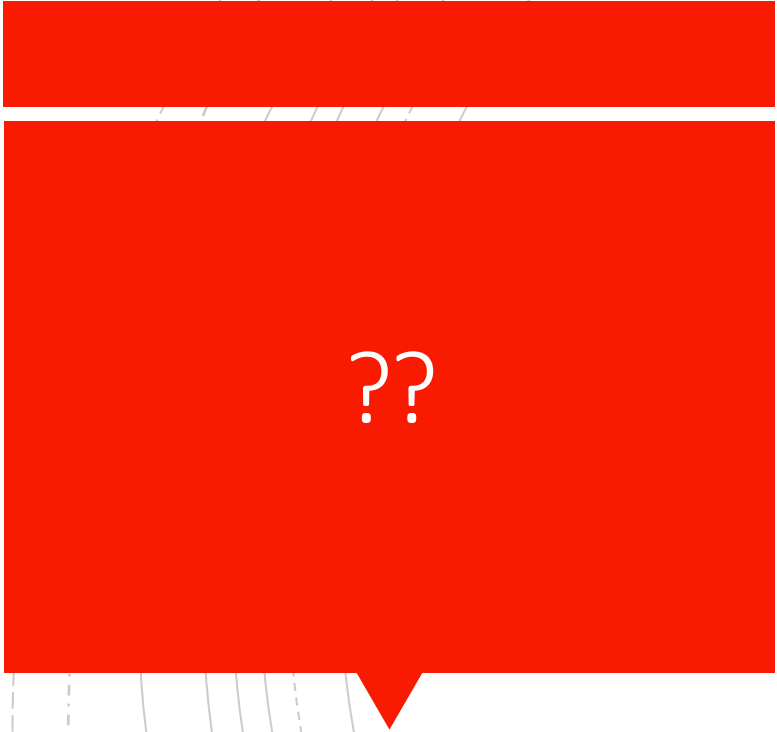




# NFPA and Food Trucks

- <https://youtu.be/KuAlxaMkr-E>
- <https://youtu.be/BzzOE4IwFtU>
- <https://youtu.be/7cfTJrrJh1o>
- <https://youtu.be/f9BJ8CUkWxE>
  
- **NFPA.ORG/DOCINFO**
- **NFPA.ORG/FOODTRUCKSAFETY**





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Thank You!!



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