Fire Prevention, It's More Than Just Walking Around Your Facility

Presented By

irwin siegel agency
INSURANCE PROGRAMS & RISK MANAGEMENT

ESIS®

Today's Presenter

Joseph McGinnis, CSP

- HSE Consultant for 6 years
- Career Firefighter/EMT for 8 years
- Volunteer Firefighter/EMT for 14 years
- Graduated from Indiana University of Pennsylvania with a Bachelor's Degree of Science in Safety Sciences
- Certified as:
  - Certified Safety Professional
  - Firefighter I and II
  - Hazardous Materials Operations
  - Driver/Operator - Pumper
  - Fire Instructor I
  - Fire Department Health and Safety Officer
  - Vehicle Technical Rescuer I and II
  - Trench Technical Rescuer I and II
  - Emergency Medical Technician

Today's Objectives

- Explore the phenomena of fire
- Discuss the ways to stop a fire
- Review why fire is so important
- Discuss methods of preventing fires from occurring
- Discuss equipment that will protect against a fire
- Review applicable NFPA standards
- Review OSHA regulations
- Discover tools to assist in making an emergency action plan and fire protection plan

What Is Fire?

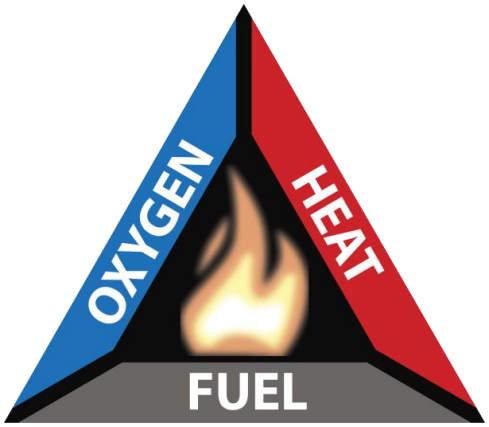
- It is a phenomena that has intrigued human beings since our cave dwelling days
- Was once believed to be one of the four basic elements by the ancient Greeks
- Fire is the result of a rapid chemical reaction
- The chemical reaction produces heat and most of the time light

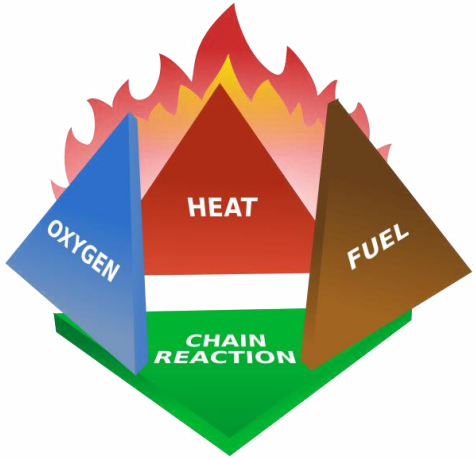
Photo Provided by Theresa McGinnis, August 13, 2017

What Is Needed for a Fire?

Fire does not just appear, it needs other elements to be created:

- Fuel Source
- Heat Source
- Oxygen
- Chemical Chain Reaction





What is Dangerous about Fire?

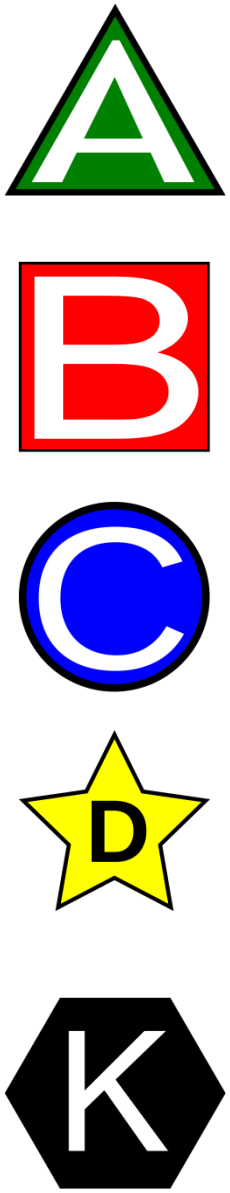
- Smoke or Incomplete Combustion
- Heat
  - From the Fire
  - From the Smoke
  - Conduction
  - Convection
  - Radiation

Photo Provided by Theresa McGinnis, September 1, 2018

So How Do We Stop a Fire?

We remove one of the four parts of the fire tetrahedron

1. Cooling or Remove the Heat
2. Suffocation or Remove the Oxygen
3. Remove the Fuel
4. Disrupt the Chemical Chain Reaction



Fire Classifications

The United States uses the following classifications for fire types:

- Class A – Combustible Materials
- Class B – Flammable Liquids and Gases
- Class C – Electrical
- Class D – Metal
- Class K – Kitchen Oils

Why do we care about fire?

Photo Provided by Theresa McGinnis, September 1, 2018

National Fire Statistics

- 1,345,500 Fires
- 3,280 Deaths
- 15,700 Injuries
- $14.3 Billion in Loss

- 1 fire reported every 30 seconds
- 1 person died every 3 hours
- 1 person injured every 33 minutes
- $453.45 lost every second

Based on the US Fire Administration's (USFA) 2015 Statistics

National Fire Statistics

Residential Fire Causes

Of approximately 364,400 fires

- 50.3% Cooking
- 9.6% Heating
- 6.6% Unintentional, Careless
- 6.5% Electrical Malfunction
- 4.2% Intentional
- 27% All Other

Non-Residential Fire Causes

Of approximately 96,800 fires

- 29.9% Cooking
- 11.0% Unintentional, Careless
- 9.3% Intentional
- 7.4% Electrical Malfunction
- 7.4% Heating
- 35% All Other

Based on the USFA's 2016 Statistics

How Does This Compare to You?

National Statistics

- 50.3% Cooking
- 9.6% Heating
- 6.6% Unintentional, Careless
- 6.5% Electrical Malfunction
- 4.2% Intentional
- 27% All Other

USFA's 2016 Statistics for Residential Fire Causes

ISA Statistics

- 23.1% Cooking
- 14.5% Smoking
- 11.1% Intentional
- 9.4% Electrical Malfunction
- 8.5% Unintentional, Careless
- 7.7% Equipment Malfunction
- 32.5% All Other

ISA Insured's Claim since 2011

How Does This Compare to You?

Residential Board & Care Facilities

- 83% Cooking
- 4% Smoking
- 3% Heating
- 3% Intentional
- 3% Clothes Dryer/Washer
- 2% Electrical Malfunction

NFPA's 2009-2013 Structure Fires in Residential Board and Care Facilities Fact Sheet

ISA Statistics

- 23.1% Cooking
- 14.5% Smoking
- 11.1% Intentional
- 9.4% Electrical Malfunction
- 8.5% Unintentional, Careless
- 7.7% Equipment Malfunction
- 32.5% All Other

ISA Insured's Claim since 2011

How Does This Compare to You?

Hospital or Hospice Facility	Mental Health or Substance Abuse Facility	Clinic or Doctor's Office
1,600 Structure Fires 1 Death 29 Injuries $5.5 Million in Damages	1,450 Structure Fires 1 Death 23 Injuries $2.7 Million in Damages	700 Structure Fires 0 Deaths 6 Injuries $18.7 Million in Damages
Leading Causes • Cooking Equipment • Contained Trash • Electrical Distribution & Lighting Equipment	Leading Causes • Cooking Equipment • Contained Trash • Clothes Dryer/Washer	Leading Causes • Cooking Equipment • Heating Equipment • Electrical Distribution & Lighting Equipment
Area of Origin • Kitchen or Cooking Area • Bedroom	Area of Origin • Kitchen or Cooking Area • Bedroom	Area of Origin • Kitchen or Cooking Area • Office

Provided by NFPA's Structure Fires in Medical, Mental Health and Substance Abuse Facilities Fact Sheet – February 2009

Fire Prevention or Fire Protection?

Fire Prevention

- Teaching how to prevent the fire from starting in the first place
  - Cooking Safety
  - Electrical Safety
  - Appliance and Equipment Inspections
  - Smoking Safety

Cooking Safety

- Staying in the Kitchen
- Checking on Your Food
- Oven Mitts and Towels
- Microwaves
- Toasters
- Appliances in the Kitchen
- Grease and Cooking Oil

Electrical Safety

- Power Outlets
  - Overloaded = More Heat
  - Improper wiring
- Extension Cords
  - OSHA = less than 30 days
- Electrical Cords
  - Frays
  - Exposed wires
  - Missing ground prongs

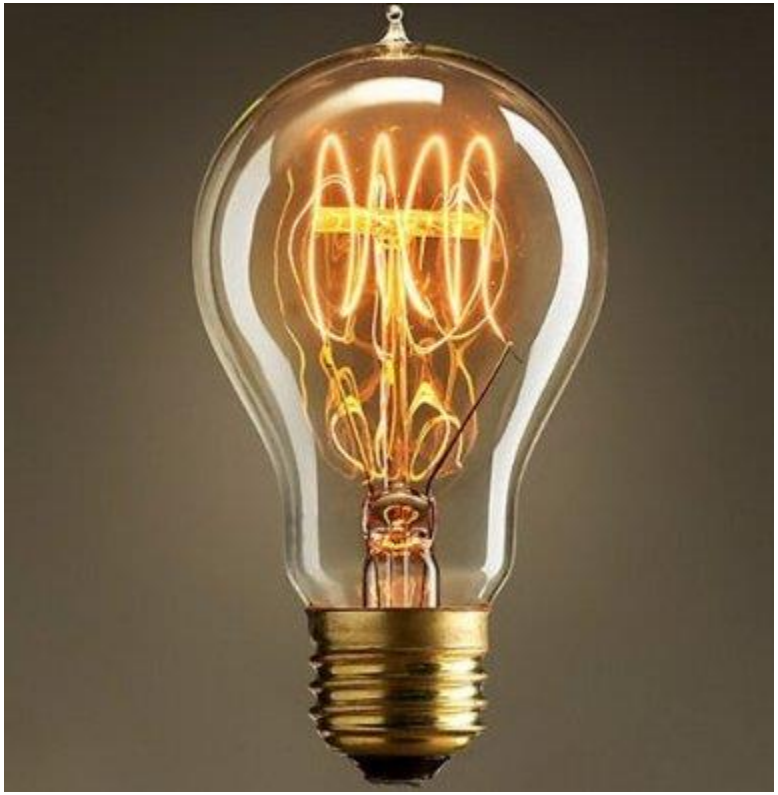
Electrical Safety

During inspections:

- Look for frayed or damaged wires
- Check that electrical panels have 36” of clear space in front of them
- Check that cords are protected from people tripping on them or running them through doorways

Electrical Safety

- Incandescent Bulbs
  - Produce Heat
  - Wattage matches the light fixture
- LED Bulbs
  - Energy efficient
  - Relatively cool when operated
  - Verify that the replacement matches the lighting fixture



Appliances and Equipment

- Dryer
- Washer
- Kitchen Appliances
- HVAC Systems
- Heating Systems (Boilers, Furnaces, etc.)
- Fans
- Stove / Oven

Appliances and Equipment

- Preventive Maintenance Programs
- Replacement of Old Equipment and Appliances
- Regular Inspections
- Unplugging Appliances when not needed
- Use only for what they were intended

Smoking Safety

- Smoking Cessation Programs
- Providing Designated Smoking Areas
  - Consider covered and potentially climate controlled areas
- If you allow it, provide ash trays and receptacles for smoking paraphernalia that are fire resistant/proof
- Train smokers to run water over the ends of their smoking materials to prevent rekindle

Fire Protection

- Putting systems and equipment in place to detect and/or stop a fire once it has started
  - Smoke Alarms
  - Sprinkler Systems
  - Fire Extinguishers
  - Other Fire Protection Designs

Smoke Alarms

- Detect smoke once it has reached the alarm
- Should be placed on every level and in every room where someone sleeps
- There are different types of smoke alarms available.
  - 9V Battery Operated (Most Common)
  - Hard Wire
  - 10 Year Battery (New)
  - Ionization vs Photoelectric

Smoke Alarms

- All smoke alarms have a 10 year life expectancy and should be replaced at the 10 year mark
- Battery Operated or Battery Back Up smoke alarms should have the battery changed in the spring and in the fall

- Test smoke alarms monthly
- Verify that the smoke alarms are in place and not removed

Sprinkler Systems

- Depending on age of occupancy building, may already be required by the AHJ
- May be retroactively placed into a facility in order to protect the building from fire
- Will only activate once the temperature is hot enough to break the fuse or link
- Usually contains the fire to the room of origin
- Will reduce the amount of fire and smoke damage throughout the building
- Reduces the likelihood of injuries to both occupants and the responding firefighters

Sprinkler Systems

Sprinkler System Designs Governed by NFPA 13

- Wet Pipe Systems
- Dry Pipe Systems
- Needs an engineer to design the system

Inspections Governed by NFPA 25 Chapter 5

- Visual – Annually
- Gauges and Valves – Quarterly
- Test Antifreeze Solution – Annually
- Test Water Flow Alarm – Quarterly
- Others as required by the type of system and manufacturer

Sprinkler Systems

- Room Comparison – Sprinkler vs. No Sprinkler

Fire Extinguishers

- AHJ determines if these are required throughout the building
- OSHA requires training before anyone is allowed to use the fire extinguisher
- Should only be used for the type of fire encountered
- Can give people a false sense of security if they are not properly trained on its use

Governed by NFPA 10

- General Requirements
- Selection
- Installation
- Inspection, Maintenance and Recharging
- Hydrostatic Testing

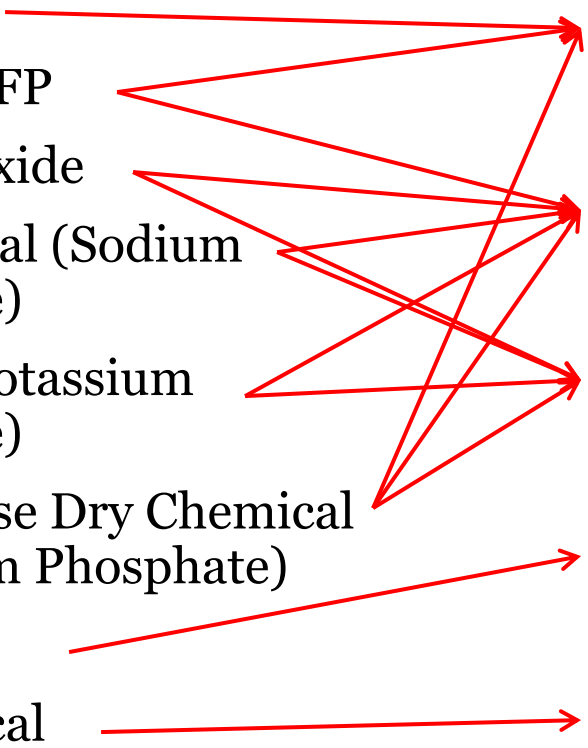
Fire Extinguishers

Inspections

- Inspected at least monthly
- Verify the space is clear 3 feet in front of them
- Readily accessible
- Fully charged
- Within the recommended lifespan

Fire Extinguisher Types

Extinguishing Agent	Class of Fire
Water	Class A
AFFF or FFFP	
Carbon Dioxide	Class B
Dry Chemical (Sodium Bicarbonate)	
Purple K (Potassium Bicarbonate)	Class C
Multipurpose Dry Chemical (Ammonium Phosphate)	Class D
Dry Powder	
Wet Chemical	Class K



Fire Protection Designs

- Means of Egress
  - Stair and hallway sizes
  - Signs
  - Design of Exits
- Building Materials
  - Door size and material
  - Walls and ceilings

900 Degree Difference Video

Laws and Legislation

National

- Occupational Safety and Health Administration
  - Adopted NFPA Life Safety Code 101 as an alternative to following the OSHA Regulations
- Centers for Medicare and Medicaid Services
  - Adopted NFPA Life Safety Code 101 and NFPA Health Care Facilities Code 99

State and Local

- State Fire Marshal's Office
- Municipal Code Enforcement
- Local Fire Department (if they are the Authority Having Jurisdiction [AHJ])
- The Designated AHJ

NFPA 101: Life Safety Code
NFPA 99: Health Care Facility Code

The Codes that Defines How Buildings Are Built To Protect Occupants

NFPA – What's Important

NFPA 101: Life Safety Code

- Provides the overall requirements for fire protection in all occupancies
- Specifies
  - Doors
  - Hallways
  - Windows
  - Escape Routes
  - Fire Ratings
  - Minimum Fire Protection Requirements per Occupancy Type

NFPA 99: Health Care Facility Code

- Develops Risk Categories for Health Care Facility's
  - Activities
  - Systems
  - Equipment
- Provides guidance on creating hazard assessments and subsequent preparation for potential disaster for the various critical infrastructures in the health care facility
- Training and Education on Emergency Plan

OSHA

- OSHA eTool: Hospital – Fire Safety
- OSHA eTool: Evacuation Plans and Procedures
- OSHA: Fire Safety Page

NFPA Resources Available to You

- Public Education Section
  - https://www.nfpa.org/Public-Education
  - All the resources are free to you if you print them from the website.
- Healthcare Training
  - https://catalog.nfpa.org/Healthcare-Training-C3704.aspx?icid=D658

US Fire Administration Resources

- USFA Outreach Materials & Educational Programs

Irwin Siegel Agency's Resources

- Thermal Imaging of Building Systems and Electrical Wiring
- Fire Prevention Inspections
- Compliance Inspections and Audits
- Training
- Fire Prevention Plan and Emergency Action Plan Review and Development

Questions

- Additional questions that cannot be answered during the webinar can be emailed or sent via the webinar platform to Irwin Siegel Agency and will be answered as soon as possible.

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