Objectives (1 of 5)

- Explain why all firefighters should have a basic understanding of fire protection systems.
- Describe the basic components and functions of a fire alarm system.
- Describe the basic types of fire alarm initiation devices and where each type is most suitable.

Objectives (2 of 5)

- Describe the fire department’s role in resetting fire alarms.
- Explain the different ways that fire alarms may be transmitted to the fire department.
- Identify the four different types of sprinkler heads.
- Identify the different styles of indicating valves.
Describe the operation and application of the following types of automatic sprinkler systems:
- Wet-pipe system
- Dry-pipe system
- Preaction system
- Deluge system

Describe when and how water is shut off to a building’s sprinkler system and how to stop water at a single sprinkler head.

Describe the differences between commercial and residential sprinkler systems.

Identify the three types of standpipes and the differences among them.

Describe two problems that fire fighters could encounter when using a standpipe in a high-rise.

Identify the hazards that specialized extinguishing systems can pose to responding fire fighters.
Fire prevention and building codes require that most new structures have some sort of fire protection system installed. Understanding how these systems operate is important for fire fighter safety and effective customer service.

From a safety standpoint:
- The operations and limitations of fire detection and suppression systems.

From a customer service standpoint:
- Help dispel misconceptions about fire protection systems.
- Advise building owners and occupants after an alarm is sounded.

Fire protection systems have fairly standardized design requirements across North America.
- Most areas follow the applicable NFPA standards.
- Local fire prevention and building codes may require different types of systems for different buildings.
Fire Alarm and Detection Systems

- A fire detection system recognizes when a fire is occurring and activates the fire alarm system.
  - Alerts occupants.
  - May alert the fire department.
  - May automatically activate fire suppression systems.

Fire Alarm and Detection Systems

- Fire alarm and detection systems can be very simple or very complex.
  - These systems generally have the same basic components.

Residential Fire Alarm Systems

- Single-station smoke alarm most common type of residential fire alarm system.
  - Includes both a smoke detection device and an audible alarm within a single unit.
  - Millions installed in private dwellings and apartments.
Residential Fire Alarm Systems
(2 of 4)
- Smoke alarms can be battery-powered or hard-wired to a 110-volt electrical system.
  - Most building codes require hard-wired, AC-powered smoke alarms in all new construction.
  - Batter-powered units are popular in existing occupancies.
- Drawback, dead batteries.

Residential Fire Alarm Systems
(3 of 4)
- Up-to-date codes require new homes to have a smoke alarm in every bedroom and on every floor level.
  - Also require a battery backup, in case of power failure.
  - Newer installations, interconnected, (one sounds all sound).

Residential Fire Alarm Systems
(4 of 4)
- Many home fire alarm systems are part of security systems.
  - Have an alarm control panel & require a pass code to set or reset the system.
  - These systems may or may not be monitored by a central station.
  - Note: CSFM does not approve any combined system, must be approved fire only.
Ionization versus Photoelectric Smoke Detectors

- Ionization detectors are triggered by the invisible products of combustion.
- Photoelectric detectors are triggered by the visible products of combustion.

Ionization Detectors (1 of 2)

- Ionization detectors work on the principle that burning materials release many different products of combustion.
- Senses the presence of invisible charged particles (ions).
- Small amount of radioactive material.

Ionization Detectors (2 of 2)

- Smoke particles enter the chamber, they neutralize the charged particles and interrupts the current flow. This interruption activates the alarm.
Photoelectric Detectors (1 of 2)
- Photoelectric smoke detectors use a light beam & a photo cell to detect larger visible particles of smoke.
- Operate by reflecting a light beam, into or away from the photocell, depending on the design.
- When visible particles reflect in or away from the photocell, the alarm is activated.

Photoelectric Detectors (2 of 2)

Ionization versus Photoelectric Smoke Detectors
Pros and Cons

- Ionization
  - More common & less expensive.
  - React more quickly to fast burning fires.
  - Fumes, dust and steam trigger unwanted alarms.

- Photoelectric
  - More responsive to slow-burning or smoldering fires.
  - Less prone to fumes, dust and steam unwanted alarms.

Ionization / Photoelectric Smoke Detectors

- Both types are acceptable life-safety devices.
- Combination ionization/photoelectric smoke detectors are available.
- Most ionization and photoelectric smoke alarms look very similar to each other.
  - Only way to identify correct type is to read the label on the back of the case.

Fire Alarm System Components

- Three basic components in a fire alarm system:
  - Alarm initiation device
  - Alarm notification device
  - Control panel
Fire Alarm System Components

- Alarm initiation device is either automatic or manually operated.
- Alarm notification devices are generally an audible device.
- Can be accompanied by a visual device.
- Control panels link the initiation device to the notification device.

Fire Alarm System Control Panels

1. Serves as the “brain” of the system.
2. Manages and monitors the proper operation of the system.
3. Can indicate the source of an alarm.

Also manages primary power supply and provides backup power supply for the system.
- It may perform additional functions.
- Notify the Fire Department.
- Be interfaced with other systems and facilities.
- Example: shut down HVAC systems (see next slide...).
Fire Alarm System Control Panels

- Vary greatly depending on age of system and manufacturer.

- Used to silence the alarm and reset the system.
- Many buildings have an additional display panel, called a remote annunciator in a separate location.
- In some systems, a battery in the fire alarm control panel will automatically activate when the external power is interrupted.
Fire Alarm System Control Panels
(5 of 8)

- Used to silence the alarm and reset the system.
- Panels should always be locked, keys in the key box (KNOX box).
- Alarms should NOT be silenced or reset until the activation source is located.
- Refer to Department SOP’s.

Fire Alarm System Control Panels
(6 of 8)

- Many buildings have an additional display panel, called a remote annunciator.
  - Usually located at the front entrance.
  - It enables firefighters to ascertain type & location of the alarm as they enter the building.

Fire Alarm System Control Panels
(7 of 8)

- Fire alarm control panels should monitor the condition of the entire system to detect faults.
- Usually they are powered by 110-volt line.
  - Some systems have a batter backup.
    - Fire code specifies they battery time.
    - If the main power or back up power source fails, a trouble alarm should sound.
**Fire Alarm System Control Panels**

- Other features: 
  - Reset button
  - Silence switch
  - Power supply

**Alarm Initiating Devices**

- Components that activate a fire alarm system.
  - Automatic devices function without human intervention.

**Manual Initiation Devices**

- Designed so that building occupants can activate the fire alarm system.
  - Primary manual initiation device is the manual fire alarm box, or manual pull-station.
  - Once activated, should stay in the "activated" position until it is reset.
**Double-Action Pull Stations**

- Variation on the *double-action* pull-station, designed to prevent malicious false alarms, is covered with a piece of clear plastic.
- Often used in areas where malicious false alarms frequently occur.

**Manual Initiation Devices**

- Once activated, a manual pull-station should stay in the "active" position until it is reset.
  - Enables responding firefighters to determine which pull-station initiated the alarm.
  - Resetting requires a special key, screwdriver, or allen wrench.

**Automatic Initiating Devices**

- Designed to function without human intervention.
- Can use several different types of detectors.
  - Some detectors activated by smoke or by invisible products of combustion.
  - Others react to heat, light produced by an open flame, or specific gases.
Smoke Detectors

- Designed to sense the presence of smoke.
- Commonly found in school, hospital, business, and commercial occupancies with fire alarm systems.
- Most common are ionization and photoelectric detectors.

Each detector device is rated to protect a certain floor area, large areas place detectors in a grid pattern.

A beam detector is photoelectric smoke detector used to protect large open areas such as church's or auditoriums.

Heat Detectors

- Common automatic alarm devices.
- Can provide property protection, but cannot provide reliable life safety protection.
- Generally used in situations where smoke alarms cannot be used.
- Often installed in unheated areas.
- Generally very reliable and less prone to false alarms than smoke alarms.
There are several types of heat detectors.

- **Single-station**, usually in unoccupied areas of buildings that have not fire alarms system, attic/storage rooms.

- **Spot detectors** are individual units spaced throughout an occupancy covering a specific floor area.

- **Line detectors** use wire or tubing strung along the ceiling of large open areas to detect increase in heat.

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**Fixed Temperature Heat Detectors**

- Designed to operate at a preset temperature.
- Usually use a metal alloy that will melt at the preset temperature.

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**Rate-of-Rise Detectors**

- Will activate if the temperature of the surrounding air rises more than a set amount in a given period of time.
- Most rate-of-rise heat detectors are self-restoring.
- Generally respond faster to most fires than fixed-temperature heat detectors.
Line Heat Detectors

- Use wires or a sealed tube to sense heat.
- One type has two wires inside, separated by an insulating material.
- Another type measures changes in the electrical resistance of a single wire as it heats up.
- The tube-type line heat detector has a sealed metal tube filled with air or a nonflammable gas.

Flame Detectors

- Specialized devices that detect the electromagnetic light waves produced by a flame.
- Typically found in places where early detection and rapid reaction to a fire is critical.
- Also used in explosion suppression systems.
- Complicated and expensive.

Flame Detectors

- Can be activated by the sun or welding operations.
- Combining infrared and ultraviolet sensors lessen the chances of a false alarm.
Gas Detectors

- Calibrated to detect the presence of a specific gas.
- Need regular calibration.
- Usually found only in specific commercial or industrial applications.

Air Sampling Detectors

- Continuously capture air samples and measure the concentrations of specific gases or products of combustion.

Air Sampling Detectors

- Draws air sample in and analyzes it using an ionization or photoelectric smoke detector.
- Installed in air ducts of large buildings.
  - Will sound alarm and shut down the air conditioning system if smoke is detected.
- More complex systems are sometimes installed in special hazard areas.
**Alarm Initiation by Fire Suppression Systems**
- System alerts building occupants and the fire department to a possible fire.
- Ensures that someone is aware water is flowing, in case of an accidental discharge.

**False, Unwanted, and Nuisance Alarms**
- Malicious False Alarms
  - Caused by individuals who deliberately activate a fire alarm when there is no fire.
- Unwanted Alarms
  - Occur when an alarm system is activated by a condition that is not really an emergency.
- Nuisance Alarms
  - Caused by improper functioning of an alarm system or one of its components.

**Alarm Notification Appliances**
- Produce an audible signal when fire alarm is activated.
- Some signals play a recorded announcement in conjunction with the temporal-3 pattern.
- Many new systems incorporate visual notification devices.
Other Fire Alarm Functions

- May also control other building functions, such as air handling systems, fire doors, and elevators.
- Responding fire personnel must understand which building functions are being controlled by the fire alarm.

Fire Alarm Annunciation Systems

- Almost all alarm systems are now zoned to some extent.
- In a coded system, zone is identified not only at alarm control panel but also through audio notification device.
- Systems can be broken down into four categories: non-coded alarm, zoned non-coded alarm, zoned coded alarm, and master-coded alarm.

Non-Coded Alarm System

- Control panel has no information indicating where in the building the fire alarm was activated.
- Typically sounds a bell or horn.
- Fire department personnel must search the entire building to find which initiation device was activated.
Zoned Non-Coded Alarm System

- Most common type of system, particularly in newer buildings.
- Building divided into multiple zones, often by floor or by wing.
- Alarm control panel indicates in which zone the activated device is located.
  - May indicate the type of device – easy to locate.

Zoned Coded Alarm

- In addition to having all the features of a zoned alarm system, also indicates which zone has been activated over the announcement system.
- Hospitals often use this type of system.

Master-Coded Alarm

- Audible notification devices for fire alarms also are used for other purposes.
  - Example: school may use the same bell to announce a change in classes to signal a fire alarm.
- Most of these systems have been replaced by modern speaker systems that use the temporal-3 pattern fire alarm signal and have public address capabilities.
Fire alarm systems can be broken down into five categories, based on how the fire department is notified of an alarm:

- Local alarm system
- Remote station system
- Auxiliary system
- Proprietary system
- Central station

Local Alarm System
- Does not notify the fire department.
- The alarm sounds only in the building to notify the occupants.
- Buildings with this type of system post notice for occupants to call 911.

Remote Station System
- Sends signal directly to fire department or to another monitoring location via a telephone line or a radio signal.
Fire Department Notification

**Auxiliary System**
- Building’s fire alarm system tied into a master alarm box located outside.

**Proprietary System**
- Building’s alarms connected directly to monitoring site owned and operated by building owner.

**Central Station**
- Third-party, off-site monitoring facility that monitors multiple alarm systems.
- An activated alarm transmits a signal to the central station by telephone or radio.
- Personnel at the central station then notify the appropriate fire department of the fire alarm via phone, cellular or radio.
Fire Suppression Systems

- Include automatic sprinkler systems, standpipe systems, and specialized extinguishing systems such as dry chemical systems.
- Understanding how these systems work is important because they can affect fire behavior.
  - Further, firefighters need to know who to interface with the system and shut them down to avoid unnecessary damage.

Automatic Sprinkler Systems

- In most automatic sprinkler systems, the sprinkler heads open one at a time as they are heated to their operating temperature.
- One of the major advantages of a sprinkler system is that it can function as both a fire detection system and a fire suppression system.

Automatic Sprinkler Myths

All fire sprinklers in the building go off at the same time
The basic operation principles of an automatic sprinkler system

Four major components:
- Automatic sprinkler heads
- Piping
- Control valves
- A water supply, which may or may not include a fire pump.
**Design Area**
- An area whose size is related to the occupancy.
- Where all sprinklers in the area are expected to actuate.

**Automatic Sprinkler Heads**
- The working ends of a sprinkler system, standard ½" orifice.
- Composed of:
  - A body, which includes the orifice (opening).
  - A release mechanism that holds a cap in place over the orifice.
  - A deflector that directs the water in a spray pattern.

**Fusible Link Sprinkler Heads**
- Use a metal alloy, such as solder that melts at a specific temperature.
- Alloy links two other pieces of metal that keep the cap in place.
- When designated operating temperature is reached, solder melts and the link breaks, releasing the cap.
Frangible Bulb Sprinkler Heads

- Use a glass bulb filled with glycerin or alcohol to hold the cap in place.
  - As bulb is heated, liquid absorbs the air bubble and expands until it breaks the glass, releasing the cap.

Chemical-Pellet Sprinkler Heads

- Use a plunger mechanism and a small chemical pellet to hold the cap in place.
  - Pellet will liquify at a preset temperature.
  - When pellet melts, liquid compresses the plunger, releasing the cap and allowing water to flow.

Special Sprinkler Heads

- Designed for special applications.
  - Covering large areas
  - Discharging the water in extra-large droplets
  - ESFR sprinkler heads have improved heat collectors to speed up response and ensure rapid release.
Sprinkler Head Options

Deluge Heads
- Easily identifiable, because they have no cap or release mechanism.
- Orifice is always open.
- Only used in deluge sprinkler systems.
Temperature Ratings

- Typical rating for sprinkler heads in a light hazard occupancy would be 165°F (74°C).
- Rating should be stamped on the body of the sprinkler head, frangible bulb use color-codes.

Temperature rating must match the anticipated ambient air temperatures.
- Spare heads that match those used in the system should always be available on-site.

Mounting Position

- Mounting position is designed into the system and cannot change.

Upright

Sidewall

Pendant
Old Style vs. New Style Heads

- **Old Style**
  - Until the 1950's, deflectors in both pendant & upright directed part of the water stream up toward the ceiling.

- **New Style**
  - After the mid 1950's deflect the entire water stream down to the fire.
  - Old heads cannot be used today in new systems, old heads also have a 50 year shelf life.

Sprinkler Piping

- Network of pipes that delivers water to sprinkler heads.
- Includes main water supply lines, risers, feeder lines, and branch lines.
- Usually made of steel.
- Plastic pipe sometimes used in residential systems.
Most new systems are computer designed.

Sprinkler system designers use piping schedules or hydraulic calculations to determine the size of pipe and the layout of the “grid”.

All of the valves play a critical role in the design and function of the system.

A sprinkler system includes several different valves such as:

- Main water supply control valve.
- Alarm valve.
- Other, smaller valves used for testing and service.

Sprinkler Piping

Valves
Water Control Valves

- All water supply control valves must be of the “indicating” type, meaning that the position of the valve itself indicates whether it is open or closed.

Control Valves

- OS&Y
- PIV
  - Reads OPEN or SHUT
Control Valves

- Wall mounted OS&Y/PIV's.
- System control valves.

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...more than fighting fires

Water Supplies

- Water may come from municipal water system, on-site storage tanks, or static water sources.
- Water supply must be able to handle demand of the sprinkler system, as well as the needs of the fire department.
- Preferred water source for a sprinkler system is a municipal water supply.

Control Valves

- Valves should be locked open and/or have tamper switch alarms to prevent closing.
Water Supplies

Fire Pumps

- Used when the water comes from a static source.
- May also be used to boost the pressure in some sprinkler systems, particularly for tall buildings.

Fire Department Connection (FDC)
Delivery Systems

- Fire department connections (FDC).
  - For F.D. pumping water to sprinkler, standpipe or other systems furnishing water for fire extinguishment.
  - Can make a desirable auxiliary supply.
  - There shall be no shut-off valves in FDC’s.
  - National standard threads.
    - Equipped with standard caps, easy to remove by F.D.

Water Flow Alarms

- Most systems incorporate a mechanical flow alarm called a water-motor gong.
- When system is activated and main alarm valve opens, water is fed through a pipe to a water-powered gong located outside the building.

Types of Automatic Sprinkler Systems

- Divided into four categories:
  - Wet sprinkler systems
  - Dry sprinkler systems
  - Preaction sprinkler systems
  - Deluge sprinkler systems
Wet Sprinkler Systems

- Most common and the least expensive type of automatic sprinkler system.
- Piping always filled with water.
- As sprinkler head activates, water is immediately discharged onto the fire.
- Major drawback: cannot be used in areas where temperatures drop below freezing.
- Will also flow water if a sprinkler head is accidentally opened or a leak occurs in the piping.

Wet-Pipe Systems

- Water under pressure at all times and connected to a water supply.
- Most reliable.
- Water discharges immediately.
- Must protect from freezing by an antifreeze loop.
- Alcohol or anti-freeze solutions may be used (glycol or glycerin).
Operate much like wet sprinkler systems, except that the pipes are filled with pressurized air instead of water.

A dry-pipe valve keeps water from entering the pipes until the air pressure is released.

Dry-pipe is used in large facilities, for cold weather or to protect property for accidental activation.
Problems with dry sprinkler systems.

- The delay between the activation of a sprinkler head and actual water flow.
  - Accelerators are installed to assist.
    - Rapid drop in air pressure triggers the accelerator, which allows air pressure to flow to the supply side of the clapper valve eliminating the pressure differential.

- Exhausters
  - Detects a drop in air pressure and opens a large-diameter portal, so the air in the pipes can escape.
  - Closes when it detects water.

Similar to a dry sprinkler system with one key difference:

- A secondary device must be activated before water is released into the sprinkler piping.
- When the system is filled with water, it functions as a wet sprinkler system.
Deluge Sprinkler Systems

Water flows from all of the sprinkler heads as soon as the system is activated.

Does not have closed heads that open individually at the activation temperature; all of the heads in a deluge system are always open.

Activated in one of three ways:

- Detection system can release the deluge valve when a detector is activated.
- The deluge system is connected to a separate pilot system of air filled pipes with closed sprinkler heads.
- Most are released manually.
Ch. 36
Deluge Sprinkler Systems (3 of 3)

Order to shut down sprinkler system should come only from the IC.

(WAR STORY)

In most cases, system can be shutdown by closing main control valve (OS&Y or PIV).

In zoned systems, a particular zone can be closed to isolate the effected zone.

Placing a wooden wedge or a commercial sprinkler stop into the sprinkler head can quickly stop the flow of water.

This will not work with all types of heads.
Residential Sprinkler Systems

- Relatively new, but many homes now being built include them.
- Typically use smaller piping and sprinkler heads with smaller orifices and less water discharge.
- Use plastic pipe to control cost, usually a wet system from domestic water supply.

Standpipe Systems

- Network of pipes and outlets for fire hoses built into a structure to provide water for firefighting purposes.
- Usually used in high-rise buildings, although they are found in many other structures as well.
- At set intervals throughout the building, having valves for firefighters to connect hose to.
- Found in buildings with & without sprinklers.
Standard Firefighter Hose Pack

- 100' High Rise Hose Pack with 50' auxiliary hose roll
- Break-Away SAF nozzle
- 100' 1 ¾" hose
- 2 ½" to 1 ½" gated wye
- 3" hose stinger
- 50' of 1 ¾" hose role

Class I Standpipes

- Designed for use by fire department personnel only.
- Each outlet has a 2 1/2" male coupling and a valve to open the water supply after the hose is connected.

Class II Standpipes

- Outlets generally equipped with a length of 1 1/2" single-jacket hose preconnected to the system.
- Intended to enable occupants to attack a fire before the fire department arrives, but safety and effectiveness is questionable.
**Class III Standpipes**
- Have the features of both Class I and Class II standpipes in a single system.
- Have 2 1/2” outlets for fire department use as well as smaller outlets with attached hoses for occupant use.
- Firefighters should use only the 2 1/2” outlets, even if they are using an adapter to connect a smaller hose.

**Water Flow in Standpipe Systems**
- Actual flow depends on the water supply, as well as on the condition of the piping system and fire pumps.
- Flow-restriction devices or pressure-reducing valves often installed at outlets to limit pressure and flow.
- If not properly installed and maintained, these devices can cause problems for firefighters.

**Water Supplies**
- Wet standpipe systems in modern buildings are connected to a public water supply with an electric or diesel fire pump to provide additional pressure.
- Most dry standpipe systems do not have a permanent connection to a water supply, so the FDC must be used to pump water into the system.
Specialized Extinguishing Systems

- Specialized extinguishing systems are often used in areas where water would not be an acceptable extinguishing agent.
  - Example, to protect computer equipment.

Types of Systems

- Foam
  - Flammable liquids.
- Carbon dioxide
  - Where dry chemicals cannot be used.
- Halon (clean agent)
  - Electronics & electrical equipment.

Dry Chemical Extinguishing Systems

- Use the same types of finely powdered agents as dry chemical fire extinguishers.
- Agent kept in self-pressurized tanks or in tanks with an external cartridge of carbon dioxide or nitrogen that provides pressure when the system is activated.
Wet Chemical Extinguishing Systems

- Used in most new commercial kitchens.
- Use a proprietary liquid extinguishing agent.
- Much more effective on vegetable oils than the dry chemicals used in older kitchen systems.

Types of Systems

- Dry chemical
  - Flammable liquids
- Wet chemical
  - Kitchen protection (grease)

Dry Chemical Systems

- Total flooding
  - Discharges agent into an enclosed space or area.
- Local application
  - Discharge directly on burning material.
Dry Chemical Systems
- Semiannual service test (6 months).
- Expellant gas
  - Pressure and weight.
- Dry chemical agent
  - Agent level and weight.
- Semiannual checks

Wet Chemical System Applications
- Areas of use.
  - Flammable liquids and gases
  - Greases
  - Ordinary combustibles
- Agent is aqueous solution.
- Contact with animal fat or vegetable oil forms a soap foam.

Wet Chemical Systems
- Same as dry chemical.
- Semiannual service test.
- Wet chemical agent.
  - Liquid level
- Semiannual checks.
Initiation Devices

- Fusible links are placed above the target hazard to activate extinguishing systems.
- Manual discharge button also provided so that workers can activate the system if they discover a fire.

Clean Agent Extinguishing Systems (1 of 3)

- Often installed in areas where computers or sensitive electronic equipment are used, or where valuable documents are stored.
- Nonconductive and leave no residue.
- Halogenated agents or carbon dioxide are generally used.
- Operate by discharging a gaseous agent into the atmosphere at a concentration that will extinguish a fire.

System Configurations (2 of 3)

- Local application
  - Portion of a room or specific hazard.
- Total flooding
  - Entire room or building.
- Pre-engineered
  - Predetermined, one-of-a-kind hazard.
If there is a fire, the clean agent system should be completely discharged before fire fighters arrive. Should be tied to building’s fire alarm system and indicated as a zone on the control panel. Alerts fire fighters that they are responding to a situation where a clean agent has discharged, need SCBA.

Designed to protect a single room or a series of rooms. Should be connected to the building’s fire alarm system.
**CO₂ Systems**

- Installed according to NFPA 12.
- Tested annually.
  - Discharge test when needed.
- Cylinders tested semiannually.
- High Pressure Cylinders weighed recharge if 10% loss by weight.
- Level gauges of low-pressure container inspected and recorded.
- System hoses examined.
  - 2,500 psi for high-pressure systems.
  - 900 psi for low-pressure systems.

**SAFETY**

All chemical and gas agents create an Hazardous Environment is one of several ways:

1. Agent is toxic once exposed to fire.
2. Agent displaces oxygen.
3. Agent can hazardous to health in its natural form, usually requiring prolonged exposure.

Always use SCBA!!!
Summary (2 of 2)

- Regardless of how sophisticated a fire protection system is, a serious fire can still occur.
- It is every fire fighter's job to try to limit water damage from the activation of a sprinkler system.
- Fire fighters must understand the potential shortcomings of using a standpipe system to prevent injuries and fatalities.

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Video

So why do Sprinklered Buildings Burn