Chapter 14 – IFPO - CPO

Fire Prevention, Detection and Response

Purpose

Fire is one of the most hazardous threats to life and property.

Understanding how combustion occurs, how to detect fire, extinguishment methods and effective strategies for protection of life is essential for security professionals.

Key Terms

- Fire Triangle
- Extinguisher Types
- Stand Pipes
- Containment
- Arson

Fire Basics

The Fire Triangle

For fire to occur, three elements must be in place:

- Fuel, (the material that will burn,) oxygen and heat
- Without the presence of ALL THREE components, a fire cannot begin or be sustained.

Inspection of Hazardous Areas

Areas that are cluttered have an increased chance of fire. They should be frequently inspected until properly cleaned:

- Boilers, heaters, furnaces
- Laundry areas
- Electrical equipment and breaker rooms
- Storage areas for flammable liquids
- Vehicle storage areas
- Work areas with combustible liquids (oils, paints, etc.)
- Smoking areas
- Cooking areas

Detection Methods

The two methods of fire detection are:

1. **Human Observation**

Human observation is often more effective, since it allows for the use of reasoning and judgment to determine the nature of actual situation.

2. **Electronic Systems**

Electronic systems are highly effective:

- Use of sensors for multiple areas:
  - Smoke
  - Rapid increase in temperature
  - Early combustion of airborne particles

The ideal detection program is a combination of human observance and electronic monitoring.

Fire Types

The basic classes of fires are as follow:

- **Class A:** Common materials - paper, wood and cloth.
- **Class B:** Flammable liquids - Petrol, kerosene, compressed gas like propane, etc.
- **Class C:** Electrical fires
- **Class D:** Combustible metals – Require special equipment to handle
- **Class K:** Oils and greases normally found in commercial kitchens

Extinguishers and Their Uses

Common extinguisher types and class(es) of fires they are designed to be used on:

- **Dry Chemical:** Expels a pressurized, nonflammable stream of powder. Used on:
  - Class A, B and C fires
- **Carbon Dioxide:** Produce a cloud of snow-like particles. Used on:
  - Class B and C fires
- **Water-Base:** Used on Class A fires ONLY.
- **Halogenated Units:** Uses a chemical that leaves no residue. Cool and smother fire. Used on:
  - Class A, B and C fires
- **Foaming Agents:** Produce a foam layer that blocks the flow of oxygen. Used on:
  - Class A and B fires

Permanent Extinguishing Hardware

These are elaborate extinguishing devices that are installed in/on buildings.

- **Automatic Sprinklers:** Operate through a spring-loaded valve that opens when exposed to a certain minimum temperature.
- **Range-Hood Systems:** Used in kitchen areas to grease and other common kitchen fires. Triggered manually by people who observe a fire.
- **Stand Pipes:** Are like an extension of the fire hydrant. Provides the fire fighters with a source of water to extinguish the fire.

Containment

Starts with design limitations and construction requirements:

- Fire-resistant doors, designed to resist the spread of a fire for certain periods of time, aid greatly in the containment of a fire.
- Must be installed in accordance with manufactures requirements.
- Security should patrol to confirm that fire doors are in proper condition and closed.

Fire Plans

- As part of the formal plan, alarm systems should be regularly inspected and tested to ensure proper functioning.
- Once developed and approved, people must be trained and the plan MUST be exercised. An untested plan is simply a concept.

Fire Plans

- The most effective step in any fire prevention, detection and response program is the development of a fire plan.
- Developing the plan must be done in cooperation with those expected to execute the plan.
- Senior management must support and approve.
- Fire marshal might have to review and approve the plan (check local regulations.)
- Plan should be shared with area first responders.

The written plan should include the following:

- Emergency contact names and numbers
- A detailed chain of command
- Explanation of equipment available and inspection/maintenance schedule
- Explanation of training and frequency of retraining
- Charts and diagrams of the property
- Detailed explanation of responsibilities for:
  - Prevention aspects
  - Response aspects

Arson

- An intentionally set fire, usually for one of these reasons:
  - Monetary/Insurance fraud
  - Psychological disorders
  - To hide prior criminal activity
- Best protective measures are:
  - Highly visible patrols
  - Securement of rooms with flammable materials

Fire as a Weapon

- Officer awareness of patterns or materials being delivered are important for overall situational awareness.
- The security officer's observations and actions are the front-line of preventing the use of fire as a weapon.
- All security personnel should be trained in plans involving evacuation and shelter-in-place.