***TOPIC:*** Inspection Procedures For Smoke, Flame And Heat Detectors

***LEVEL OF INSTRUCTION:*** II

***TIME FRAME:*** 30 Minutes

***BEHAVIORAL OBJECTIVE:***

*Condition:* The student will have general knowledge of smoke, flame and heat detectors

*Behavior:* The student will have general knowledge of smoke, flame and heat detectors.

*Standard:* With a minimum of 70% accuracy, according to the information contained in this lesson plan.

***MATERIALS NEEDED:***

- Appropriate visual aids and supplies

***REFERENCES:***

- Private Fire Protection And Detection, IFSTA, 1st Edition, Chapter 4

***PREPARATION:*** To ensure the operational readiness of detectors, these devices should be inspected routinely by qualified personnel. Although it is not normally within the area of responsibility of a fire department to maintain these systems, fire personnel should have a knowledge of detection systems for inspection purposes, and for public education presentations.

| PRESENTATION | APPLICATION |
|---|---|
| **I. INSPECTING DETECTORS** | |
| A. Important Part Of An Alarm System | |
| 1. Testing shall be in accordance with NFPA Standard #72 | |
| | What are three conditions that indicate a need for testing? |
| 2. Three conditions indicate a need for testing | |
| a. Initial installation | |
| b. After a fire | |
| c. Within an elapsed period of use | |
| B. Inspecting Heat Detectors | |
| 1. Non-restorable fixed temperature | |
| a. Cannot be tested periodically | |
| b. Testing destroys detectors | |
| c. A test is required 15 years after installation | |
| d. Two percent of the detectors must be replaced and sent to a nationally recognized testing laboratory | |
| e. Failure of any detector requires additional detectors to be submitted for testing | |
| | How often should the loop resistance be tested on cable type line detectors? |

| PRESENTATION | APPLICATION |
|---|---|
| f. Cable-type line detectors must have the loop resistance tested semi-annually | |
| 2. Restorable detectors | |
| a. Will be tested with a portable heat source | |
| b. One detector on each signal | |
| c. Test semi-annually | |
| d. A different detector must be tested each time | |
| 3. Fusible link with replaceable links | |
| a. Test semi-annually | |
| b. Remove link and observe whether or not contacts close | |
| | What is the recommendation for fusible link replacement? |
| c. Recommended that the links be replaced with new ones at five year intervals | |
| 4. Pneumatic-type | |
| a. Tested with a heating device or an approved pressure pump | |
| b. Test semi-annually | |
| c. If a pressure pump is used, follow manufacturer's instructions | |
| C. Smoke Detectors | |
| 1. Test semi-annually | |

| PRESENTATION | APPLICATION |
|---|---|
| 2. In accordance with manufacturer's instructions | |
| 3. Manufacturer's instructions should be used to test performance and sensitivity | |
| | Is cigarette smoke an acceptable test? |
| 4. Cigarette smoke is not considered an acceptable test | |
| | How should flame detectors be tested? |
| D. Flame Detectors | |
| 1. Instruction for testing procedures and training should be required by the bid specification from the manufacturer | |
| a. Testing of the system is recommended to be included in a service contract from the installer | |
| | When should detectors be replaced? |
| E. General Considerations | |
| 1. Detector should be replaced or sent to a recognized laboratory for testing if | |
| a. Restored to service after a period of disuse | |
| b. Visibly corroded | |
| c. Has been painted | |
| d. Has been cleaned of paint | |
| e. Subjected to mechanical injury | |

| PRESENTATION | APPLICATION |
|---|---|
| f. Circuits have been subjected to<br>(1) Surges<br>(2) Over-voltages<br>(3) Lightning damage | |
| g. Area subjected to grease and other deposits or corrosive atmospheres | |
| 2. Detectors placed in corrosive atmospheres shall be of approved type | |
| F. Records | |
| | What should be recorded on detector test records? |
| 1. A record of all detectors must be maintained for a minimum period of five years. Record data should include:<br>a. Date<br>b. Detector type<br>c. Location<br>d. Type of test<br>e. Results | |

***APPLICATION:***

Heat, smoke and flame detectors form an important part of the fire protection picture. A basic knowledge of this equipment and how to inspect it is necessary to keep the picture complete and safe.

***EVALUATION:***

A written examination.

***ASSIGNMENT:***

To be determined by the instructor(s).