Interpreting Fire Dynamics

Format: Groups or all students

Time: 2 hours

Description
This activity provides students with an opportunity to observe and interpret fire dynamics.

Materials

- Air Quality Management District permit (if required)
- Incident Action Plan (IAP)
- Burn cubicles sufficient to accommodate the 1:15 instructor/student ratio
    - Wood or steel frame (minimum 8'x8') with 8' ceiling
    - Window(s) and door (optional)
    - Drywall interior with optional interior finishes
    - Floor covering
    - Furniture and/or other combustibles
    - Smoke alarm (optional)
- Fire suppression equipment
- Multi-gas area monitoring equipment (to monitor VOCs, oxygen enrichment/deficiency, carbon monoxide, formaldehyde, and hydrogen sulfide)
    - One per burn cubicle recommended
- Fire suppression personnel to manage live fire burn cubicles in accordance with NFPA 1403 and AHJ policy and procedure
- Personal protective equipment

Instructions

1. Predict fire behavior
2. Observe and interpret the fire's development and dynamics
3. Compare and contrast fuel packages
4. Be prepared to discuss your observations

Instructor Notes

1. State Fire Training requires that personal conduct all live fire activity in compliance with NFPA 1403: Standard on Live Fire Training Evolutions (current edition) in the IAP.
2. Record the fire development for review after the investigation.

Activity Content

After completion of the burn, answer the following questions. Be prepared to discuss your observations.

1. What were the observable fire effects?

2. What were the observable fire patterns?

3. Describe the fire's movement and intensity.

4. How did ventilation contribute to the fire's movement?

5. How did fuel items and/or fuel packages influence the fire effects and patterns?

6. How did the air entrainment process affect plume development?

7. Did this fire flashover or rollover? Explain your reasoning.

Conducting an Origin and Cause Fire Investigation

Format: Group

Time: 8 hours

Description
This activity provides students with an opportunity to conduct an origin and cause fire investigation.

Materials

- Burned cubicle (no more than 15 students per cubicle) and/or burned structure
- Tools and equipment
- Personal protective equipment
- Evidence collection equipment
- Device capable of taking photographs
- Graph paper and notepad
- Pens or pencils
- Electronic device for developing and delivering a presentation

Instructions

1. Select a group leader.
2. Conduct an exterior scene survey.
    - Recognize, analyze, and interpret fire patterns
    - Sketch and photograph the scene
    - Identify, protect, and photograph evidence
3. Conduct an interior scene survey.
    - Identify the area of origin and potential ignition source(s)
    - Recognize, analyze, and interpret fire patterns
    - Sketch and photograph the scene
    - Identify, protect, and photograph evidence
4. Examine and remove debris.
    - Evaluate the area to begin processing/excavating
    - Use the delayering technique/sifting of debris
    - Identify, protect, and photograph evidence
5. Reconstruct the area of origin.
    - Examine the fire effects on the materials
    - Return materials to their original position using protected areas and fire patterns
    - Photograph the scene after reconstruction
6. Present your findings (team leader).

Instructor Notes

1. Allow 1 hour for the groups to prepare their presentation.
2. Allow a minimum of 30 minutes for each group presentation.