



S-130 Unit 14: Fire Environment Hazards

Summary:

The intent of this unit is to introduce students to hazards that exist in the fire environment. The concepts of situational awareness and risk management apply to everything we do. Mitigation and avoidance are key concepts in maintain the health and safety of the wildland fire workforce.

Incident Position Description (IPD) Alignment:

This unit aligns with the following FFT2 IPD specific duties

(<https://www.nwcg.gov/positions/fft2/position-ipd>):

- Identify health and safety hazards from smoke and mitigate exposure as necessary.
- Comply with all safety practices and procedures.
- Provide for health, safety, and welfare for self and those around you.

Objectives:

Students will be able to:

- Describe concerns associated with hazard trees.
- Describe physiological and mental effects of smoke exposure.
- Describe concerns associated with driving.

Unit at a Glance:

Topics	Method	Duration
Hazard Tree Safety	Presentation	20 Minutes
Smoke Hazards	Presentation	20 Minutes
Smoke Hazard Mitigation	Presentation	10 Minutes
Driving Safety	Presentation	10 Minutes
Total Unit Duration		1 Hour

Materials:

- Incident Response Pocket Guide (IRPG), PMS 461, <https://www.nwcg.gov/publications/461>.
- Notebook for participants.
- S-130 Student Evaluation Task Sheet.
- Ability to display images and video on large screen.
- White board or easel access for group breakouts.

Unit 14: Fire Environment Hazards

Slide 1



Unit 14: Fire Environment Hazards

Slide 2

Objectives

Students will be able to:

- Describe concerns associated with hazard trees.
- Describe physiological and mental effects of smoke exposure.
- Describe concerns associated with driving.

S-130 Unit 14: Fire Environment Hazards 2

- ☐ Review unit objectives.

Unit 14: Fire Environment Hazards

Slide 3



- ❑ Discuss that hazard trees, both dead and live green trees, are one of the most common risks encountered on the fireline. All firefighters should frequently survey their work area for potential hazard trees.
- ❑ Reference Hazard Tree Safety in the *Incident Response Pocket Guide (IRPG)*, PMS 461, <https://www.nwcg.gov/publications/461>.
- ❑ Discuss environmental elements:
 - Current and forecasted winds.
 - Night operations. As well as low visibility situations limiting your view or surroundings.
 - Steep slopes.
 - Diseased or bug-kill areas. Especially in areas with high densities of dead or dying trees.
 - Number and height of hazard trees. As well as density.
 - Anticipated burn-down time. The amount of time the area has been burning.
 - Potential for trees to domino. In relation to surrounding trees.
- ❑ Discuss hazard tree indicators:
 - Trees burning for any period of time.
 - High risk tree species (rot and shallow roots).
 - Numerous downed trees in the area.
 - Dead, broken, or burning tops and limbs overhead.
 - Accumulation of downed limbs.
 - Absence of needles, bark, or limbs.
 - Leaning or hung-up trees.

Unit 14: Fire Environment Hazards

☐ Discuss hazard control:

- Eliminate the hazards with qualified sawyers/fallers, blasters/explosives, or heavy equipment.
- Avoid hazards by designating “No Works Zones” (flag, sign, and map).
- Modify suppression tactics or fireline construction to avoid high risk areas.
- Post lookouts to help secure high risk areas.
- Utilize road/traffic controls in high risk areas.
- Fire proof potential hazard trees to prevent ignition.
- Keep clear of bucket drops near trees/snags.
- Reposition firefighters to secure areas in response to high winds in forecast.
- Provide timely feedback to others regarding any hazard trees.

Unit 14: Fire Environment Hazards

Slide 4



Pre-Video Discussion

- This video will address the safety and health risk associated with smoke exposure, and its effects on risk management decision making.
- ☐ Have the students make a list of any issues they can think of regarding exposure to wildland fire smoke.
- ☐ **Play Video**

Title Smoke: Knowing the Risks, <https://youtu.be/hD8OD2l09ds>

Summary A discussion of air pollutants and harmful contaminants in smoke.

Time (13:42)

Audio

Post-Video Discussion

- ☐ Have students compare their initial list of issues with what they learned from the video.
- ☐ How does smoke exposure affect fire personnel's ability to implement the risk management process as it relates to the 10 Standard Fire Orders and 18 Watch Out Situations?
- ☐ When an individual experiences symptoms or sees symptoms in a co-worker, discuss ways to communicate to their leadership if smoke exposure is becoming an issue.

Unit 14: Fire Environment Hazards


Slide 5

Knowledge Check

What component of smoke poses the greatest health risk to fireline personnel?

Answer:

Particulate Matter



S-130 Unit 14: Fire Environment Hazards5

Question: What component of smoke poses the greatest health risk to fireline personnel?

Answer: Particulate Matter

Unit 14: Fire Environment Hazards

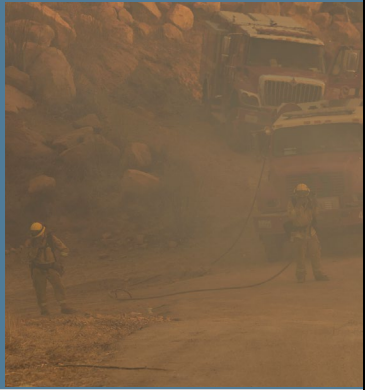
Slide 6

Knowledge Check

List the four signs and symptoms of short-term smoke exposure presented in the video.

Answer:

- Coughs
- Colds
- Fatigue
- Bronchitis (camp crud)



The video still shows a fire scene with thick, dark smoke billowing from a structure. Two firefighters in full protective gear are visible in the foreground, one holding a hose. The scene is dimly lit, with the primary light source being the fire itself, creating a hazy and dangerous environment.

S-130 Unit 14: Fire Environment Hazards 6

Question: List the four signs and symptoms of short-term smoke exposure presented in the video.

Answer: Coughs

Colds

Fatigue

Bronchitis (camp crud)

Unit 14: Fire Environment Hazards

Slide 7



- ☐ Reference Smoke Hazards and Mitigation in the *Incident Response Pocket Guide (IRPG)*, PMS 461, <https://www.nwcg.gov/publications/461>.
- ☐ Discuss common smoke effect mitigation tactics:
 - Hydrate before, during, and after smoke exposure to aid the body's natural filtering capability to remove harmful smoke components from lungs and blood stream.
 - Rotating personnel into fresh air whether performing direct attack, holding, or mop up.
 - Recognizing smoke exposure symptoms and communicate to a supervisor immediately.
- ☐ Discuss fire camp location as it relates to smoke exposure:
 - Because ICPs are usually set up in valleys and meadows to accommodate numerous tents, equipment, and vehicles. They are susceptible to diurnal smoke, which settles into camp at night thus exposing personnel to high concentrations of smoke.

Unit 14: Fire Environment Hazards

Slide 8



Pre-video discussion

- ☐ Advise students that based on recent accident trends, vehicle accidents are the source of more deaths and serious injuries to wildland firefighters than any other single cause.
- ☐ Advise student that the content in this video is about 10-15 years old but the content is still accurate and valid.

Play Video

Title Driving Safety, <https://youtu.be/xSG-U8BeOeU>

Summary Discusses driving safety and inherent risks that should be avoided.

Time (01:33)

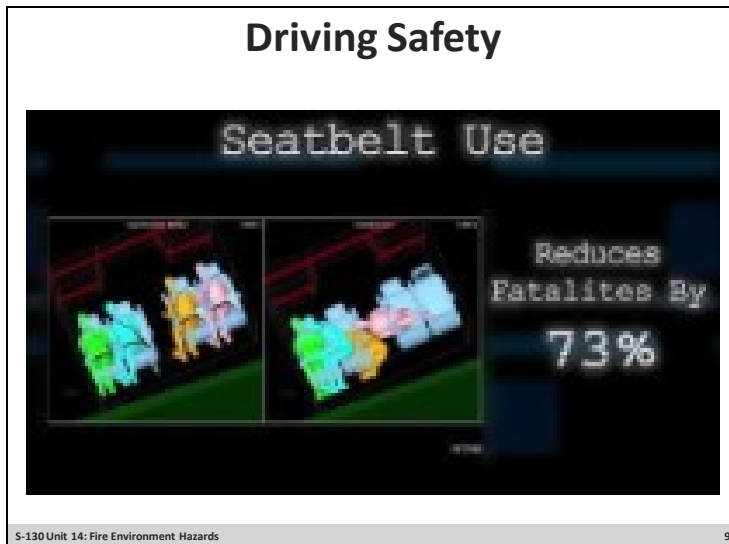
Audio

Post-Video Discussion

- Safe driving starts with a safe vehicle. Something as simple as under-inflated tires can have serious consequences.
- ☐ Discuss use of preventative maintenance (PM) checks and vehicle familiarization:
 - Make sure the lights and blinkers work.
 - Adjust your seat and mirrors.
 - If it is the first time you have driven the vehicle, make yourself aware of where everything is.
- ☐ Reference Smoke and Transportation Safety in the *Incident Response Pocket Guide (IRPG)*, PMS 461, <https://www.nwcg.gov/publications/461>.
- ☐ Discuss content of Smoke and Transportation Safety found in the IRPG.

Unit 14: Fire Environment Hazards

Slide 9



Pre-Video Discussion

- ☐ Advise students that content in this video depicts a more current timeline.
 - To be a safe driver you have to *want* to be one. Take a good hard look at your driving habits. Are you training yourself to do the right things the right way, like fastening your seat belt, checking your mirrors, and maintaining safe following distances?

☐ Play Video

Title Rollover Accidents and Seatbelt Safety, <https://youtu.be/41wb8bDt2w4>

Summary This module discusses the fact that seatbelt safety in passenger vehicle rollover accidents continues to be a issue among firefighters.

Time (01:28)

Audio

Post-Video Discussion

- Inattentiveness is a major contributing factor in motor vehicle accidents within the wildland firefighting community. Since the average adult attention span is 15-20 minutes we must develop techniques that allow us to refocus our attention on our driving.
- Many things can lure our attention away from our driving such as fatigue, eating and drinking, reading directions and maps, writing, cell phone and radio use, conversation within the vehicle, and music.

Unit 14: Fire Environment Hazards

Slide 10

Objectives

Students will be able to:

- Describe concerns associated with hazard trees.
- Describe physiological and mental effects of smoke exposure.
- Describe concerns associated with driving.

S-130 Unit 14: Fire Environment Hazards 10

☐ Review unit objectives.