Wildland Fire Fighting
Hot Tips to Stay Safe and Healthy

Every year, hundreds of thousands of acres of land burn across the United States and wildland fire fighters (WFFs) are asked to protect our lives, our homes and our forests.[1] But fires are unpredictable and dangerous. In fact, over 200 on-duty WFF fatalities occurred between 2001 and 2012.[2]

WFFs often work long hours for many days under stressful conditions, which can negatively impact their health, increase the likelihood of on-duty injury and affect performance.[3] This fact sheet was developed to keep WFFs safe and healthy.

Photo by George Broyles, US Forest Service

Recommended Practices for Wildland Fire Fighters

WIldland fire presents unique challenges and WFFs must understand how to best protect their health and safety while fighting fires. Wildland fire fighters should:

- **Maintain situational awareness:** Establish, update and be familiar with Lookouts, Communications, Escape Routes and Safety Zones (LCES).[4]
- **Know the Fire Orders and Watch Out Situations:** Understand the 10 Standard Fire Orders and 18 Watch Out Situations and use the Incident Response Pocket Guide (IRPG) to understand and mitigate hazards.[5,6]
- **Stay healthy:** Maintain good physical fitness; exercise regularly, eat properly, don't smoke, and get the recommended amount of sleep.
- **Take breaks:** When necessary, stop working, rest in cool areas and stay hydrated.
- **Drive safely:** Always wear seatbelts and modify driving based on road conditions. Never drive when tired or impaired and follow your agency requirements.
- **Wear appropriate personal protective equipment (PPE):** Always wear wildland fire specific PPE and carry a fire shelter.
- **Report injuries, illnesses and hazards:** Report all work-related injuries, hazards and unsafe working conditions to supervisors, safety officers or to the appropriate reporting system.
- **Be aware of increased risks of heat-related illness and rhabdomyolysis:**[5] Both conditions are potentially life threatening. If you think you are affected by these conditions, stop work and seek medical treatment immediately.
    - **Heat-related illness:** Can result in heat rash, cramps, exhaustion or heat stroke. It is important to understand your risk, the symptoms of heat-related illness, and how to prevent and treat heat-related illness.
    - **Rhabdomyolysis:** A serious medical condition that results from the breakdown of damaged muscle tissue and can cause permanent disability or death.[7]

Common Work-Related Hazards Faced on the Fireline

Safety Hazards

- Aircraft incidents
- Burns
- Electrocution from power lines
- Environmental conditions (e.g., lightning, steep or remote terrain)
- Scrapes and cuts from tools and equipment
- Slips, trips and falls
- Struck-by objects, such as trees, rocks, or vehicles
- Vehicle rollovers or collisions

Health Hazards

- Ash, dust and burning debris
- Contact with plant irritants and sensitizers (e.g., poison ivy, thorns)
- Environmental conditions (e.g., lightning, cold weather)
- Fatigue
- Hazardous materials and gases
- Heat-related illness
- Insect bites or stings
- Respiratory illnesses
- Rhabdomyolysis[7]
- Smoke contaminants
- Stress

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

Recommended Practices for Supervisors

During wildland fires, the environment is constantly changing. Supervisors should identify and communicate and mitigate potential hazards at each fire and develop strategies to minimize or avoid them. Supervisors should:

Photo by Todd Wyckoff, New Jersey State Forestry Service

- **Promote a safe work environment**: Encourage WFFs to report and mitigate hazards, work-related injuries, illnesses and "near misses."
- **Maintain situational awareness**: Provide updates to crew members as changes occur or are anticipated (e.g., weather, fire behavior).
- **Manage work/rest periods**: Implement and enforce appropriate work and rest period procedures and policies to prevent heat-related illnesses, fatigue and other illnesses.
- **Ensure fire fighter safety**: Encourage WFFs to take and pass medical examinations and physical fitness tests before starting any wildland fire-related work or training.
- **Use the Incident Command System (ICS)**: The ICS should be implemented and followed in all wildland fire management and suppression operations.
- **Limit exposures**: Whenever possible, limit exposure to smoke, ash and debris. Strategies to reduce exposure include:
  - Rotating crews out of areas of heavy smoke
  - Avoiding downwind fire fighting
  - Minimizing mop-up
  - Monitoring crewmembers for health problems
  - Locating fire camps, staging areas and the Incident Command Post upwind of the fire and in areas free from inversions

DID YOU KNOW?[1,2]

- Between 2001-2012, at least 905,000 fires have burned over 75 million acres of land.
- Since 2001, the most common causes of WFF-related fatalities were aircraft incidents, vehicle incidents and cardiac related events.
- The largest number of wildland fire fighters are volunteers.

Online Resources

NIOSH Fire Fighter Fatality Investigation and Prevention Program
NIOSH Fighting Wildfires
National Wildfire Coordinating Group (NWCG) – Risk Management Committee
United States Fire Administration (USFA) Fire Fighting Health and Safety
Wildfire Lessons Learned Center

References

[1] National Interagency Fire Center [2013]. Statistics. [http://www.nifc.gov/fireInfo/fireInfo_statistics.html].
[2] Federal Emergency Management Agency, US Fire Administration [2013]. Statistics and reports. [http://apps.usfa.fema.gov/].
[3] Britton C, Lynch F, Ramirez M, Torner J, Buresh C, Peek-Asa C. [2013]. Epidemiology of injuries to wildland firefighters. Am Emerg Med 31(2):339-345.
[4] U.S. Department of Agriculture, U.S. Forest Service [2013]. LCES. Lookouts-Communications-Escape Routes-Safety Zones. [http://www.fs.fed.us/fire/safety/lces/lces.html].
[5] National Interagency Fire Center [2013]. 10 standard fire orders and 18 watch out situations. [http://www.nifc.gov/safety/safety_10ord_18sit.html].
[6] National Wildfire Coordinating Group [2010]. Incident response pocket guide. [http://www.nwcg.gov/pms/pubs/nfes1077/nfes1077.pdf].
[7] National Wildfire Coordinating Group [2011]. Rhabdomyolysis: What wildland firefighters need to know. [http://www.nwcg.gov/branches/pre/rmc/rhabdo2_3-25-11v2_nwcg.pdf].

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