

Safety Alert

(July 26, 2010)

Subject: Northern Rockies Geographic Area Mountain Beetle-Affected Landscapes

Area of Concern: Incident operations in Beetle-Affected Areas

Distribution: All incident Responders in the Northern Rockies

Discussion: Since the year 2000, approximately 3.8 million acres of forested land in the Northern Rockies Geographic Area has been attacked by beetles. This has led to the following changes in fire behavior characteristics (unpublished new research by Matt Jolly and Russ Parsons, Missoula Fire Lab):

- 1)** There is an immediate change in foliar moisture and chemistry of trees once attacked. When a tree or stand begins to show signs of needle discoloration (“transition “stage), the foliar moisture has already been reduced by more than half.
- 2)** Red needle crowns can ignite 3 to 4 times faster than unattacked, green needle crowns. There is an increased potential for accelerated transition from surface to crown fire, regardless of the presence or absence of ladder fuel or high crown base heights.
- 3)** Under normal burning conditions, fire behavior in the attacked, transition, and red needle stages may exhibit:
 - a) Increased rates of fire spread.
 - b) Increased volatility potential.
 - c) Increased heat transfer (higher BTUs and convective heating)
- 4)** Spotting potential is significantly changed due to:
 - a) Quality of embers - Due to the needle chemistry and moisture changes, occurring as early as the “attacked” stage (may still appear green), embers will burn longer, i.e. be more volatile.
 - b) Quantity of embers—Red needles will detach more readily than green, unaffected needles so more embers will be lofted.
 - c) Distance of ember lofting - Because of greater convective heating, embers may be lofted higher, therefore, increasing spotting distances.
 - d) Receptivity of ember fuel bed – If embers land on other beetle-affected trees, these needles are more receptive and provide a greatly increased, aerial fuel bed.

Mitigation Measures: Unit Leaders, Incident Commanders and Firefighters should exercise diligence to ensure the following mitigation measures are in place:

- Develop and review JHAs and Risk Assessments
- Brief all incoming resources on the hazards specific to your area
- Evaluate your work area
- Develop site specific mitigation measures
- Establish an Emergency Medical Plan
- Implement LCES
- Get a current fire weather forecast
- Maintain Situation Awareness
- Evaluate and monitor escape routes very carefully to account for increased, erratic fire behavior; pre-planned evacuation routes may require modification
- Identify appropriate size and location of safety zones based upon the potential for increased radiant and convective heating, increased rates of spread, and erratic fire behavior.