Memorandum

To: Deputy Directors
Region Chiefs
Assistant Deputy Directors
Assistant Region Chiefs
Staff Chiefs
Unit Chiefs
Program Managers

Date: 5/22/2013

Telephone: (916) 653-5371
Website: www.fire.ca.gov

From: Brent Stangeland, Department Safety Officer
Department of Forestry and Fire Protection (CAL FIRE)

Subject: CAL FIRE 2013 FOCUS ON SAFETY

The Focus on Safety is presented annually by the Department’s Safety Program to enhance our risk management efforts and support the department’s Injury and Illness Prevention Program. The desired goal is to develop and maintain a high standard of safety throughout all operations and provide opportunities for a safe and healthful workplace.

This year's topics include:

- Back to Basics
- Wellness/Resiliency
- Active Shooter Incidents
- Program/Region/Unit Specific Topic

Safety is the primary concern in our daily endeavors, especially when considering all activities involved in fire suppression efforts. This information serves as a reminder to all employees that communicating hazards and awareness of potential risk issues are paramount in reducing injuries and illnesses.

Unit and Program Managers are directed to develop additional components focusing on Back to Basics, Personal Protective Equipment, Hydration-Nutrition-Wellness, and a local Unit/Program option.

Employees are asked to verify a review of the 2013 Focus on Safety through the completion of the department's IIPP-6, Employee Training Sign-Up Sheet by Monday, June 17, 2013. Employees hired or returning from approved leaves after June 10th should complete the process within 14 days of their appointment or return. Please contact your local/unit Safety Officer if you have any questions.

“The Department of Forestry and Fire Protection, serves and safeguards the people and protects the property and resources of California”
You may ask yourself, “Why do we always review the same basic things year after year?” or “What is such a big deal about something so simple and so obvious?” What is simple and obvious about those questions is this; firefighters die every year because these basics are broken, forgotten or sacrificed in the course of firefighting operations. Several Serious Accident Reviews performed all over the nation, including a few in our own Department last year, identified violations of the 10’s, 18’s or LCES as either causal or contributory factors in the accident.

These “basics” have been developed over the years in response to tragic incidents that resulted in the serious injury or death of firefighters all over the nation. Firefighting is an inherently dangerous profession. The dangers are increasing with changing weather patterns and more extreme fire behavior and burning conditions. Upgrades in Personal Protective Equipment (PPE) allows firefighters to get closer to the hazard and stay longer, thereby exposing them to greater risks than ever before. Do not be falsely led into thinking you are immune to injury. Just because it hasn’t happened to you doesn’t mean it can’t or won’t.

As in previous years, the 2013 CAL FIRE Focus on Safety contains a “Remember the Basics” module to help ensure these fundamental basics do not fall victim to decisions or operations during the heat of battle. The Ten Standard Fire Orders, the Eighteen Fire Situations that Shout “WATCH OUT,” the Common Denominators of Wildland Fire Fatalities, and the principles of LCES are the fundamental basics and must be reviewed each year by everyone from newest firefighter to the most experienced firefighter. DO NOT just commit them to memory but UNDERSTAND what you are committing to memory and why. Be able to recognize when the conditions or situations exist BEFORE the accident happens. Following these basic safety fundamentals can be the difference between a successful mission and a catastrophic one.
Ten Standard Fire Orders

FIRE BEHAVIOR
1. Keep informed on fire weather conditions and forecasts.
2. Know what your fire is doing at all times.
3. Base all actions on current and expected behavior of the fire.

FIRELINE SAFETY
4. Identify escape routes and safety zones, and make them known.
5. Post lookouts when there is possible danger.

ORGANIZATIONAL CONTROL
7. Maintain prompt communication with your forces, your supervisor and adjoining forces.
8. Give clear instructions and insure they are understood.
9. Maintain control of your forces at all times.

IF YOU CONSIDER 1-9, THEN
10. Fight fire aggressively, having provided for safety first.
Eighteen Fire Situations That Shout “WATCH OUT!”

1. The fire has NOT been SCOUTED and SIZED UP
   a. Use aerial recon
   b. Use ground observations
   c. Look for:
      i. Fire size
      ii. Fuel types and arrangement
      iii. Topography
      iv. Hazards
      v. Safety Zones and Escape Routes

2. YOU are in country you have NOT SEEN IN DAYLIGHT!
   a. Be alert for changes in fire behavior
   b. Watch for nature’s danger signals
   c. Keep informed on weather forecasts
   d. Maintain communications with fireline supervisors

3. SAFETY ZONES and ESCAPE ROUTES have not been IDENTIFIED
   a. Safety Zones
      i. Void of vegetation
      ii. Large enough to accommodate ALL personnel (4 times the flame height)
      iii. Easy to deploy shelters (not in chimneys, saddles, or narrow canyons)
   b. Escape Routes
      i. Shortest distance to Safety Zone
      ii. Relatively easy to travel
   c. Make known to everyone
      i. Visual markers
      ii. Verbally

4. YOU are in an area where you are unfamiliar with local factors influencing FIRE BEHAVIOR!
   a. Be alert for changes in fire behavior
   b. Watch for nature’s danger signals
   c. Keep informed on weather forecasts
   d. Maintain communications with fireline supervisors
5. **YOU are UNINFORMED on strategy, tactics, and hazards**
   a. **Strategy:** the overall plan to achieve the fire suppression objectives
   b. **Tactics:** specific actions done to suppress the fire
   c. **Hazards:**
      i. Heavy fuel concentrations
      ii. Chimneys
      iii. Snags
      iv. Falling operations
      v. Firing operations

6. **YOU have been given an assignment or instructions UNCLEAR TO YOU!**
   a. When given instructions, repeat them back, particularly if they are unclear
   b. Know what you are supposed to do, before going on the line
   c. Communicate with your supervisor
   d. When possible, write down your instructions

7. **YOU have NO communication link with crew members or supervisors**
   a. Stay alert to changing conditions
   b. Stay alert to problems developing
   c. Stay alert to blow up conditions
   d. Maintain control and prevent panic

8. **YOU are constructing fireline WITHOUT A SAFE ANCHOR POINT!**
   a. Choose a point or location not currently or likely in the future, to be threatened by fire spread
   b. A place to begin your fireline where you’re likely to hold your line

9. **YOU are building a fireline downhill TOWARD A FIRE!**
   a. Have Escape Routes established
   b. EXTREMELY dangerous situation
   c. Stay with your crew
   d. Post lookouts as necessary, be alert to conditions
   e. Advanced fuels on upslope are pre-heated, will rapidly burn
   f. Spot fires on upslope can be expected
   g. Fire may generate momentum upslope and jump over hoselays or constructed hand lines

10. **YOU are attempting a frontal assault on a fire**
   a. Watch for and suppress spot fires across road or line
   b. Have established Escape Routes
   c. Do not wander into the green at an oncoming fire, wait until it gets to where you are supposed to attack it
   d. Follow orders
   e. Be alert

11. **YOU are in heavy cover with unburned fuel BETWEEN YOU and the FIRE!**
   a. EXTREMELY dangerous situation
   b. Always requires that lookouts be posted at strategic points for constant observation
   c. Line should be burned out behind you as it is being constructed
   d. Be in constant communication with your fire line supervisor
   e. Be prepared to use Escape Routes immediately
12. **YOU can not see the main fire and you are not in communication WITH ANYONE WHO CAN!**
   a. A dangerous situation at any time
   b. Area should be thoroughly scouted
   c. Post a lookout or lookouts as necessary
   d. Be weather alert
   e. Obey your supervisor

13. **YOU are fighting fire on a hillside where rolling fire can ignite fuel BELOW YOU!**
   a. Properly construct trenches on slopes to hold rolling material
   b. Have established Escape Routes, know where they are
   c. Cut your way into spot fires, don’t just walk through the green
   d. Post lookouts as necessary

14. **YOU feel the weather getting HOTTER and DRIER!**
   a. There will be a decrease in fuel moisture and humidity
   b. Fuels will burn faster
   c. Watch for increase in hot spots appearing on the fire line
   d. Be alert to changes in fire behavior

15. **YOU notice that the wind begins to blow, increase, or CHANGE DIRECTION**
   a. Fire may begin to spread in a different direction
   b. Your method of attacking and approach may now need to be changed
   c. Be alert, post lookouts as necessary
   d. Observe for changes in fire behavior

16. **YOU are getting frequent spot fires OVER YOUR LINE!**
   a. This is an indication fire conditions and weather are changing
   b. Don’t become trapped between two fires
   c. If spot fires are taking off, this indicates lower fuel moisture
   d. Be alert to what is happening around you

17. **YOU are away from a burned area where terrain and/or cover make travel SLOW and DIFFICULT!**
   a. Know where the fire is at all times
   b. Know where you are going
   c. Stay as close to the burn as possible
   d. Don’t bunch up, spread out, and be alert for rolling rocks towards firefighters below

18. **YOU feel like taking a nap NEAR THE FIRELINE!**
   a. Sleep in shifts if necessary
   b. Sleep as a group and sleep only with permission from your fire line supervisor
   c. Don’t wander off from the crew, stay together
   d. Never sleep in the green, always in the burn
   e. Post a lookout to stay awake and protect crewmembers from fire
LCES

Each firefighter must know the interconnection of LCES -

- lookouts
- communications
- escape routes
- safety zones

LCES should be established before fighting the fire: Select lookouts, set up a communications, choose escape routes, and select safety zones.

LCES functions sequentially - it's a self-triggering mechanism. Lookouts assess - and reassess - the fire environment and communicate threats to safety; firefighters use escape routes to safety zones. All firefighters should be alert to changes in the fire environment and have the authority to initiate communication.

LCES is built on two guidelines:

- Before safety is threatened, each firefighter must know the LCES system will be used,
- and LCES must be continuously reevaluated as fire conditions change.

The LCES system approach to fireline safety has been developed from the analysis of fatalities and near misses for over 20 years of active fireline suppression duties. LCES simply focuses on the essential elements of the standard FIRE ORDERS. It's use should be automatic in fireline operations, and all firefighters should know the LCES interconnection.
Common Denominators of Wildland Fire Fatalities

WILSON-SORENSON STUDY (1926-1974)
A. Most Incidents Occur on Relatively Small Fires or Isolated Sections of Large Fires.
B. Unexpected or Unpredicted Winds are Often Given as the Major Cause of "Erratic Behavior".
C. Most Fires are Innocent in Appearance (in some cases the mop-up stage) Prior to a Flare-up or Blow-up.
D. Flare-ups Occur in Deceptively Light Fuels.
E. Fires Run Uphill in Chimneys, Gullies, or on Steep Slopes.
F. Suppression “Tools” Can Adversely Modify Fire Behavior (helicopter and air tanker vortices have been known to cause flare-ups).
G. There Are No Fire Behavior Situations. The Inability to Predict Fire Behavior Causes Us to Fall Back on the Term "Erratic".

USFS STUDY (1926-1976) ANALYZING CAUSE OF DEATHS AND NEAR MISSES ON WILDLAND FIRES
(Study based on 125 wildland fires accounting for 236 fatalities and 66 Near Miss situations)
A. Fire Ran Upslope.................................29.0%
B. Sudden Wind Shift ................................20.8%
C. Head Made Fast Run..............................13.6%
D. Fire Spotted Across Line .........................9.6%
E. Fire Ran Downslope ...............................6.4%
F. Concentrated Fuel Flare-up.......................4.8%
G. Gusty Cumulus Clouds Overhead .............4.0%
H. Aircraft Turbulence ...............................0.8%
I. Equipment Failure ..................................0.8%
J. Other (heart attack, electrocution, etc.) ......9.6%
### PERSONAL PROTECTIVE EQUIPMENT INSPECTION CHECKLIST

**EMPLOYEE NAME:** ___________________________  **DATE:** ______________________

**ASSIGNMENT:** _______________________________  **INSPECTED BY:** ______________________

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<td>INSPECTION POINTS</td>
<td>PASS</td>
<td>FAIL</td>
<td>COMMENTS</td>
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<td>SCBA</td>
<td>Mask</td>
<td>Fit, Lens clarity, Spider Straps, Exhalation valve, etc.</td>
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<td></td>
<td>SCBA</td>
<td>Harness, Bottle, PASS, Gauges, Cleanliness, etc.</td>
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<td>EMS Pack</td>
<td>HEPA Mask</td>
<td>Fit, Tears, Holes, Strap elasticity, Rating, etc.</td>
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<td></td>
<td>Pocket Mask</td>
<td>Seal, Damage, One-way valve, Case, etc.</td>
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<td>Isolation Gown</td>
<td>Fit, Tears, Holes, Closures, Rating, etc.</td>
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<td>Medical Gloves</td>
<td>Fit, Tears, Holes, Latex allergies?, etc.</td>
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<td>Eye Protection</td>
<td>Fit, Lens clarity, ANSI certified, Non-vented, etc.</td>
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<td>Local Requirements</td>
<td>Local Unit policy</td>
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<td>Hearing</td>
<td>Ear Plugs</td>
<td>General condition, Fit, Rating, etc.</td>
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<td>Ear Muffs</td>
<td>General condition, Fit, Rating, etc.</td>
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<td>Local Requirements</td>
<td>Local Unit policy</td>
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<td>Bee Veil</td>
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<td>Holes, Tears, Closures, Fit, Rating, etc.</td>
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<td>Local Requirements</td>
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Wellness/Resiliency

A common issue in the fire service is balancing the need of the individual with the need of the group. No place is this more apparent than with a department wide wellness/resiliency program. While the benefit of a well-orchestrated individualized program is difficult to argue against, accounting for the strength and conditioning, nutrition, and stress management needs for all is a daunting task. With the goal of optimizing health and job performance every individual will have specific needs and it is important they discern those needs and take it upon themselves to ensure they are met. The department can provide the framework common to every employee and support him or her in his or her efforts but individual responsibility will always be the key. The common components of the framework provided are as follows:

- **Physical Training.** Department policy dictates that employees will participate in physical training during their shift and encourages participation while off shift. Physical training programs will include conditioning (aerobic/anaerobic work capacity), strength, strength endurance, and flexibility. The order and emphasis of these elements is where the individual variation becomes important. Employees should focus on shoring up weaknesses instead of continuing to develop strengths. The focus should be to achieve a base level of conditioning then improve strength, then strength endurance, all the while developing flexibility and maintaining conditioning. If training while off shift ensure adequate recovery before returning for the next shift.

- **Adequate Nutrition and Hydration.** Every employee must eat enough quality food and drink enough water to support their level of activity. The total caloric intake and macronutrient breakdown (carbohydrate, protein, and fat) will need to be adjusted for each individual to ensure recovery and adequate fueling. Protein can be set between .7 grams and 1 gram per pound of lean body mass, then think of carbohydrate and fat as separate fuel tanks. The carbohydrate tank is small but full of racing fuel; it allows for peak performance but it burns off faster than it can be refilled. It is the primary source of fuel for the brain and things fall apart when the tank gets low so conservation is key. The fat tank is where we keep the diesel, one fraction away from crude oil; this fuel source is slow and steady. From a strictly caloric perspective there is enough energy in one pound of body fat to easily run the system for a day and a half. The more adept the body is at switching back and forth between the carbohydrate tank and fat tank the better; allowing for a blend of sustained energy from fat stores and short bursts of intense energy from carbohydrate. Mental and physical performance each day is anchored by the evening meal and hydration level of the previous day.
- **Adequate Sleep.** The importance of sleep cannot be overstated. Humans can go weeks without food, days without water, but only about 36 hours without sleep before things start to go wrong. Some people claim to thrive on as little as 4-6 hours of sleep per day but studies have shown, while they might feel fine, their cognitive ability is significantly reduced. A problematic part of this process is that the less sleep we get the less able we are to judge how well we are functioning; the same holds true for the cumulative effect of multiple nights of interrupted sleep. All of this lost sleep is referred to as sleep debt and studies have shown the best way to pay it back is in 20-minute naps, 4-hour naps, and full night’s sleep. The cycle of cumulative sleep loss will start again the first day of each shift. It is paramount that employees start their shift with zero sleep debt.

- **Stress Management.** Of all the individual factors stress has to be the most confusing. Like sleep debt, it is cumulative and difficult to measure when increased slowly. Without enough we cease to adapt to our environment and with too much we are susceptible to everything from clinical depression to physical manifestations like hives. Picture a scorecard with stressors in one column and stress reducers in the other. Individuals must balance the two columns on a daily basis according to their individual priorities. Keep in mind that many things, exercise for example, can fall in either column depending on the dose. Studies show that those who are physically and mentally prepared for the stress and impact of this job cope better than those who are exposed to the stressor and treated after the fact. This preparation starts with 8 hours of quality sleep and continues throughout the day as smart physical training, good nutrition, fire ground drills, and a healthy social environment. Making an effort to reduce the stress of off duty life will make room for the inevitable stressors on duty.

The underlying theme with this common framework is that wellness/resiliency is a series of cyclical patterns; constantly recovering from the last and preparing for the next.

**Off Season**

Develop Strength / Strength Endurance -> Maintain Conditioning

Maintain Strength / Strength Endurance <- Develop Conditioning

**On Season**

**Off Duty**

Pay Sleep Debt>Intense PT>Reduce Stress>Recover>Hydrate>Eat Well

Eat Well<Hydrate<Recover<Reduce Stress<Smart PT<Optimize Sleep

**On Duty**

**Today**

Get Morning Sun>Smart PT>Eat Real Food>Hydrate>Sleep in the Dark

Sleep in the Dark<Hydrate<Eat Real Food<Smart PT<Get Morning Sun

**Tomorrow**

Special thanks to author Battalion Chief Adam Lambert /MVU
ACTIVE SHOOTER INCIDENTS

The recent wave of active shooter attacks, such as the ones in Newtown, CT, Aurora, CO, Tucson, AZ, and Utøya, Norway, illustrates the importance of procedures, systems, and training designed to mitigate the risks from active shooters.

Do you know what to do in the event of an active shooter?

A public service announcement, "Run. Hide. Fight. - Surviving An Active Shooter Event" produced by the City of Houston Mayor’s Office of Public Safety and Homeland Security provides tips on how to survive a shooting inside the workplace. Production had wrapped up just two weeks prior to the July 20, 2012 Century theater shooting in Aurora, Colorado.

Safe at Home?

In 2012, the NYPD released a 210-page “Active Shooter” report which analyzes data collected from 324 cases involving office buildings, commercial facilities, factories, and schools. The United States is home to a staggering number of “active shooter” events compared with other countries.

<table>
<thead>
<tr>
<th>Active Shooter Events (1966-2012)</th>
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<td>United States</td>
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<td>300</td>
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Definition
The Department of Homeland Security (DHS) defines an active shooter as “an individual actively engaged in killing or attempting to kill people in a confined and populated area.”

Escape is not a priority for the shooter.

Be Prepared
Because active shooter attacks are dynamic events, it is difficult to put forward a single set of best-practices for response to such incidents.

Recommendations to mitigate the risks from active shooter attacks involve procedures, systems, and training.

Get Trained
Department of Homeland Security, Active Shooter Preparedness offers free training and resources on issues such as active shooter awareness and incident response.

Includes the video:
Options for Consideration Active Shooter Training

Options for Consideration demonstrates possible actions to take if confronted with an active shooter scenario.

Keyword
ACTIVE

No negotiation.
No bargaining.
No reasoning.
Tactical law enforcement incidents present unique challenges with the potential for serious injury to responders. Incidents involving active shooter attacks on population centers have become part of law enforcement officers’ awareness; however, increased awareness of a problem does not ensure preparedness or appropriate response tactics. These incidents require unique planning and Standard Operating Guidelines (SOG).

Topics include:

**Pre-Planning Considerations**
- Development of Standard Operating Guidelines
- Training on operational tactics, strategy, and contingency considerations
- Assess Risk versus Gain

**Initial Dispatch Considerations**
- Confirm type of incident (e.g. shootings, stabbings, domestic violence, bombs)
- Verify scene security
- Determine appropriate access and response routes

**Initial Briefing**
- Obtain briefing from law enforcement upon arrival
- Identify zones and perimeters

**Fire Suppression Considerations**
- Determine if force protection is necessary
- Assess risks with ammunition or explosives under fire conditions and flash grenades
- Consider applying water to fires from cover

**FURTHER RESOURCES**
The span of resources is not limited to this document alone. The vital aspect of this presentation’s mission is to provide access to important tools with the potential to save lives.

Units and Programs are urged to review the complete Emergency Response to Tactical Law Enforcement Incidents (PDF) as provided by FIRESCOPE.