Firefighter Exposure on Bear Fire
Fort Hunter Liggett
Facilitated Learning Analysis

Subject: Seven Firefighters from the Los Padres National Forest (CA- LPF) and three from Fort Hunter Liggett (CA-FHL) are injured after exposure to an unknown substance during initial attack.
Note: This incident was reviewed using the June 2009 Facilitated Learning Analysis Implementation Guide.

Accident Date: 7/16/2010 at 1230 PM
On the afternoon of July 16, 2010 during initial attack of the Bear Incident ten firefighters, including the incident commander left the fireline complaining of nausea, vomiting, headache and extreme fatigue. The incident commander type IV trainee (ICT4-T) declared a Mass Casualty Incident (MCI) and all ten were transported via air and ground ambulance to two local hospitals for evaluation and treatment.

Summary: The type II Initial Attack Crew from LPF responded to a two acre fire at FHL. The IA crew received an initial briefing from the FHL incident commander and engaged the fire by constructing direct fireline on the left and right flanks. A captain from the type II IA crew accepted an ICT4-T training assignment and began working with the incident commander. Shortly after engagement several firefighters began feeling ill. The incident commander also became ill and the ICT4-T assumed command. A Paramedic (FHL) and Emergency Medical Technicians initiated a medical triage group and treated firefighters with oxygen and intravenous fluids as they awaited transportation by four ambulances and one medevac helicopter. All firefighters were evaluated at local hospitals and released the same day. Hospital staff performed all necessary tests prior to releasing the firefighters. A post incident military safety team discovered an expended canister of CS gas* in the area where firefighters experienced a strange smell with metallic or bitter taste. Weather conditions were in the mid 90's.

Time Table
0700 Type II IA crew comes on duty.
1100 Type II IA crew dispatched to Bear Incident.
1125 Type II IA crew on scene.
1140 Type II IA crew observes two FHL firefighters down medically.
1200 Type II IA crew member goes down medically.
1215 IC FHL goes down medically, ICT4-T assumes command. First ambulance begins transporting.
1220 The ICT4-T orders all resources off the incident and initiates welfare checks.
1225 More crew members go down medically.

1227 Paramedic request ICT4-T declare MCI.
1230 MCI declared.
1300-1338 Medevac helicopter on the ground at incident.
1352 Medevac helicopter lands at hospital with two firefighters.
1409 Last of the ambulances are transporting with approximately 60 minute drive time. Due to the condition of the firefighters it was determined that ground transport was adequate.
1509 All firefighters at hospital under emergency room care.

Conditions
The LPF has two fire stations located on Fort Hunter Liggett Army Base, and maintains a cooperative fire protection agreement with the military. The base has maintained a live fire range and hosted outside army units for live fire and explosives training for almost seventy years. The base itself was established in 1941 and encompasses approximately 165,000 acres. The LPF borders the army base on the west side for approximately 50 miles. The type II IA crew had reviewed a general fire suppression Job Hazard Analysis (JHA) that addresses some issues when working on the military base. The JHA also addresses hazardous materials and the crew recently reviewed a "6 Minutes for Safety" titled Hazardous Materials Encounters. LPF permanent fire fighters are trained to the Haz-Mat First Responder Operations level for responding to hazardous materials incidents, and have very limited Unexploded Ordinance, (UXO) training.

Lessons Learned from the Participants
I was feeling horrible and I came really close to the saw, a couple of times while pulling. If I had cut myself, I could have been hurt even more by not listening to my body. I just did not want to be the first one to go down.

I was glad that we set a trigger for withdraw; if any more of our guys went down we were pulling out.

We saw the FHL guys go down, but we just assumed it was due to heat. Next time, we will pay attention to what is really going on.

We learned from another hazmat "lessons learned" on the LPF that if our guys were exposed to some hazmat, they may need to be decontaminated before the emergency room would accept them. We passed that information along and it caused the hospital to set up a decontamination station at the emergency room.

I thought when range control gave us the OK to enter an area that the area was safe and free of hazmat.
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Lessons Learned from the Facilitators
Incident commanders must add the UXO and hazmat component into their risk management process. Normal tactics of constructing direct fireline on fast moving wildfires may increase risk when on military bases. A common tactic on these bases is to establish indirect firelines, hold and fire off existing roads and dozer lines. This of course increases exposure time of firefighters and may not prevent inhalation hazards. During the risk management process, the hazard assessment of specific military base issues warrants strong consideration.

The US Army publishes a "Wildland Firefighting 3Rs Explosives Safety Guide," which places emphasis on preplanning for response. The guide calls for firefighters to study maps, historical data and local knowledge to rank response areas into High Hazard, Low hazard and Remote Hazard of UXO discovery. This allows incident commanders to make an appropriate risk assessment when developing tactics. The guide also suggests tactics to be used during prescribed fire and to limit the use of hand tools during direct attack. It can be found on the US Army's UXO Safety Education Website at the following site.
https://www.denix.osd.mil/portal/page/portal/UXOSafety/SafetyTopics/Firefighting

When unknown exposures take place, a county hazardous material team should be contacted immediately.

The local unit should expand the JHA or create a specific JHA for working on FHL. This document should emphasize military terms and tactics used, while working among UXO's and hazardous materials. The JHA should be widely distributed and briefed on every incident.

The unit should coordinate annual training with the base to review known UXO's/hazardous material historical locations.

The ICT4-T did an exceptional job by recognizing the events that were unfolding and withdrawing his resources from the incident.

The local unit did assign an agency representative/chief officer to respond with USFS resources. This proved vital as the individual assisted with operational oversight and was a contact point for home unit communications.

When LPF units respond to FHL, Range Control at the base is contacted and asked if the area is cold or hot? There is an assumption from the field that this “cold” designation means the area is safe or clear of UXO’s. In fact, the term “cold” means at the moment there is no “live” fire taking place and obviously, “hot” is the opposite. This needs to be made clear to all first responders.

The District employees acted promptly to initiate the “Patient Advocate Program,” which assigned employees to receive the injured at two separate hospitals. These employees then completed the appropriate paperwork, made family notifications and provided transportation back to the home unit.

The declaration of an MCI did not automatically trigger the ordering of Emergency Medical Services at FHL dispatch. The incident commander was still responsible for ordering the type and quantity of air and ground transportation resources.

*CS Gas

Canister found at the incident.

2-chlorobenzalmalononitrile CAS No: 2698-41-1 (also called o-Chlorobenzylidene Malononitrile) is the defining component of a "tear gas" commonly referred to as **CS gas,** which is used as a riot control agent. "CS gas" is actually an aerosol of a volatile solvent. CS has become the most popular of tear gases due to its strong effect and lack of toxicity in comparison with other similar chemical agents. The chemical reacts with moisture on the skin and in the eyes, causing a burning sensation and the immediate forceful and uncontrollable shutting of the eyes. Effects usually include tears streaming from the eyes, coughing, running nose full of mucus, burning in the nose and throat areas, disorientation, dizziness and restricted breathing. It will also burn the skin where sweaty and or sunburned. In highly concentrated doses it can also induce severe coughing and vomiting. Almost all of the immediate effects wear off in a matter of minutes. Wikipedia 2010