

# Rapid Lesson Sharing

**Event Type:** Chainsaw Geyser Sprays/Ignites Sawyer

**Date:** June 4, 2016

**Location:** Mule Ridge Fire; south of Ruby, Arizona

***If your **chainsaw dies**, your fuel tank might be **pressurized**.***  
***If your fuel tank is **pressurized**, you might experience a **fuel geyser**.***  
***If you experience a **fuel geyser**, you might get **fuel on you**.***  
***If you've got **fuel on you**, you might **catch on fire**:***

***If your chainsaw dies: You might catch on fire.***

## NARRATIVE

On June 4 at approximately 1445 hours, a firefighter sustained a burn injury to his right forearm.

The injured crewmember, assigned as a sawyer on this fire, was engaged in holding operations along a forest road during burnout operations.

The sawyer was attempting to start a Stihl MS 461 chainsaw. The day's ambient fireline temperatures were in excess of 100 degrees, ideal temperatures for vapor lock on a chainsaw engine. (*Chainsaw fuel tank pressurization, which is a different phenomenon than vapor lock but can still lead to fuel geysers/venting, can happen at a wide range of temperatures. High temperatures are NOT a requirement for tank pressurization.*)

Unable to start the saw, he attempted to vent the saw by opening the fuel filler cap to release pressure in the tank.

### **Fuel Sprays onto Sawyer and Ignites**

As the tank filler cap was being opened, a jet of fuel was ejected from the saw, spraying fuel onto the sawyer's right leg and arm. Standing on the burned edge of the fire while conducting this activity, the fuel was ignited by a nearby ignition source.

Engine 534 crew members reacted quickly to the incident. They immediately utilized a hose line with water to suppress the fire on the individual.

The Captain of nearby Engine 551, who was the senior firefighter on scene, quickly assumed control of this Incident Within an Incident (IWI). After quickly providing an initial triage assessment of the patient based on the Incident Response Pocket Guide, the Captain alerted nearby fireline medical personnel who responded and—within three minutes—began treatment of the patient.

**What's a "fuel geyser" look like?**  
**Watch this video to see:**  
[https://youtu.be/Ja9t4PtJx\\_Q](https://youtu.be/Ja9t4PtJx_Q)



Screen Shot from Video – Shows a fuel geyser erupting from a chainsaw. (This photo/video is not from the incident discussed in this RLS.)

The EMTs provided initial trauma assessment, placing the patient in the “Yellow” category based on the mechanism of injury. Within 15 minutes from the time the burn injury occurred, the patient was quickly treated and transported from the fireline.

While the Fireline Paramedic on scene determined that the injury was non-life threatening, due to the conditions of the fireline environment, it was also determined that follow-up care was advised to ensure that the injury was kept clean to prevent possible infection.

Additionally, the Fireline Paramedic also determined that the patient transport did not require an ambulance. The patient was transported per crew protocol. The patient was seen by medical personnel and was diagnosed with a second degree one-half by three inch burn on the right arm below his elbow.

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## Saw Fuel and Burn Injuries

### Other Reports in the LLC Incident Review Database

[Fuel Cap Near Miss](#), May 24, 2016 (4 pages). While no burn injuries occurred on this recent Near Miss, the sawyer’s boots and chaps did catch fire. This story provides a good head’s up.

[Willow Peak Burn Injury](#), 2015 (22 pages). A sawyer receives serious burn injuries when fuel sprays out of the chainsaw’s gas tank and ignites.

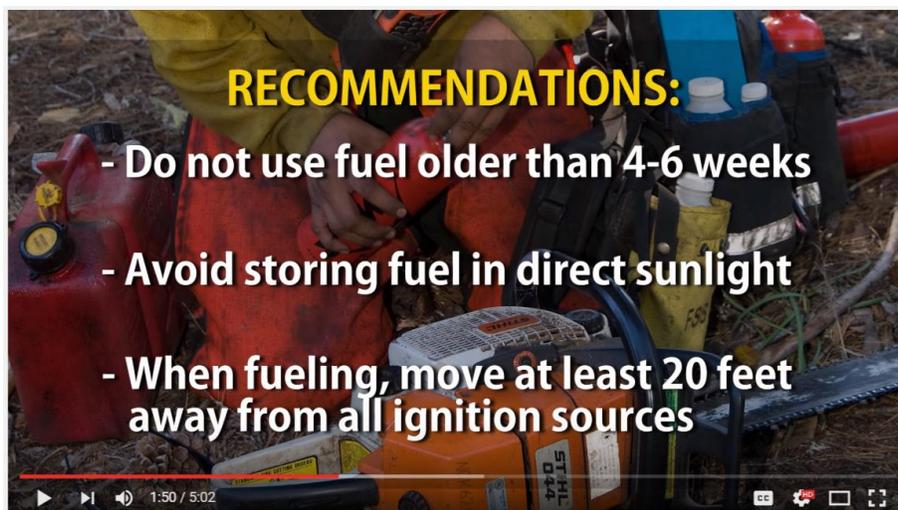
[Chainsaw Fuel Mishap - Rock Ridge Burn Injury](#), 2014 (1 page). “A county firefighter received severe burns to the forearms and legs while operating a chainsaw around the perimeter of the fire. The chainsaw was found at the incident site with the fuel cap off and the tank empty. Witnesses saw the fire ignite at ground level and then engulf the firefighter.”

[Chainsaw Vapor Lock Accident](#), 2013 (2 pages). “A sawyer was injured when gas from a Stihl MS460 chainsaw fuel tank ignited after the sawyer opened the fuel cap to release excess pressure in the tank. The fuel ignited and ‘flashed’ causing minor burns to the sawyer’s right arm, right side of neck, and right ear. The sawyer was evaluated by burn center physicians and released.”

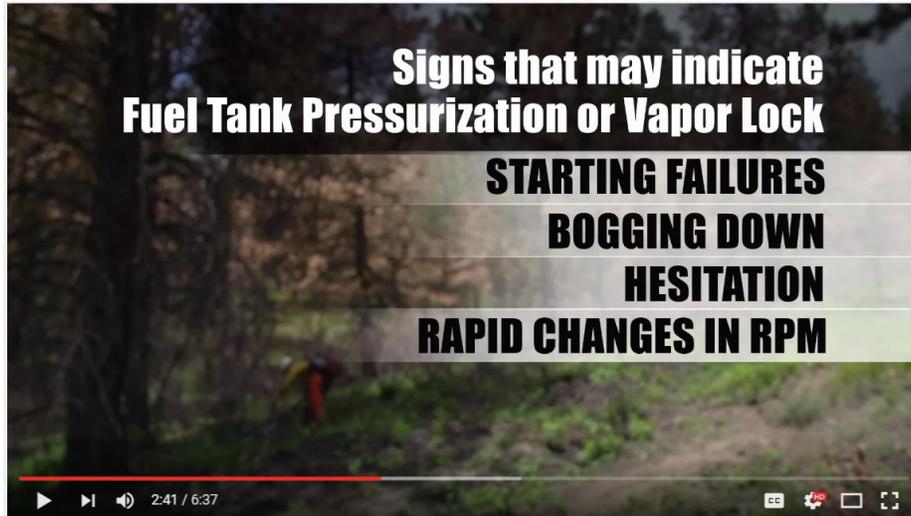
[Oak Mesa Fire](#), 2008 (6 pages). “The chainsaw operator thought the saw was running low on fuel due to the way it was running and sounded, and stopped to check. The sawyer stepped back from the line about 5 feet. When the fuel cap was opened, pressurized fuel and vapors vented from the fuel tank, spilling onto the right sleeve of the individual’s Nomex fire shirt. He tried to move the chainsaw but it ignited almost immediately and the fire spread instantly to his right arm.”

### Check Out the Insights and Lessons in these Two Videos

<https://youtu.be/d8g2iCnGAYk>



<https://youtu.be/RG9I7YkBSOg>



### [Dangers of Fuel](#)

This June 2015 RLS provides 14 fuel igniting incidents—and their lessons—reported in the past five years.

The June 4, 2016 “Chainsaw Geyser Sprays/Ignites Sawyer” RLS was submitted by:  
The Incident’s Safety Officer

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