

NWCG Equipment Technology Committee

Equipment Advisory: 22-02

January 5, 2022



To: Wildland Fire Community

From: Dave Haston, Chair, NWCG Equipment Technology Committee

Subject: Fuel Container Geysering

Issue: Fuel geysering from fuel containers can occur under two conditions:

1. When the level of fuel is above 75% of the manufacturer-specified full level and the fuel temperature exceeds 120 °F.

The resulting geyser event is likely to be severe, lasting up to 15 seconds, and is often characterized by a slight delay between opening the fuel tank to atmosphere and the actual geysering event.

2. When the fuel containers are overfilled past the bottom of the fill neck, or over 100% full.

Under this condition, pressure can build up with a modest combination of heat (105 °F ambient, during experiments) and agitation. Fuel does not have to visibly boil for the container to geyser. If a geyser occurs during this condition, the resulting geyser event is shorter in duration, lasting about a second, and is instantaneous upon opening the fuel tank to atmosphere.

Recommended Action: Fuel Container Operations

- Never fill the fuel container past the manufacturer-specified full level. If the fuel level reaches the bottom of the fill neck, the container is overfull.
- Exercise extra caution any time fuel containers appear to be more than half full, container surfaces feel hot to touch, and/or fuel has been agitated. The likelihood of geysering can be reduced by cracking open the cap and letting the container vent for at least one minute before opening fully. Since fuel vapors ignite, the venting must be performed away from any ignition source.
- Store fuel containers in the shade or out of direct sunlight, when possible.
- Vents in safety cans should be unobstructed and open prior to field use.
- When using a safety can, operators should always orient the flexible pour spout away from the user.
- When filling a safety can, open the pour spout before the fill cap to release pressure and direct any fuel geyser spray away from the user. If a fuel geyser occurs, allow the safety can to cool before reopening. When the fuel is hot, more vapors are released and could ignite easily. The safety can should be cool to the touch before reopening.
- Jerry can filler neck opening should be 1.5-inch diameter minimum. Non-circular fill shapes should have an equivalent or greater opening.

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NWCG standards are interagency by design; however, the decision to adopt and utilize them is made independently by the individual member agencies and communicated through their respective directives systems.