

Wildland Firefighting and Food Safety

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Wildland fires are becoming more common, occurring earlier, experiencing a longer duration, exhibiting greater intensity, and larger in area of involvement. Some suggest this is a result of global climate change [1]. These fires for the most part are no longer the concern of the local fire department or even state fire services. Many of the fires due to size and complexity are employing resources on a national level and even requiring an international response. In many cases, all these factors have increased the risk for fighting wildland fires. Historically, the greatest acute hazard to firefighters has been cardiovascular disease (CVD). CVD has been reported to be a factor in 45% of on-duty fatalities [2], yet this is only one of a myriad of hazards. During wildland fires, personnel will often reside near the event for days to months for purposes of preventing, controlling and cleanup. These locations have traditionally been referred to as base camps. This scenario creates a number of issues and hazards for these personnel, one being food safety.

Food safety has been considered a minor issue relating to wildland firefighters with emphasis on actual fire control methods, personal protective equipment, vehicle operation and safety during operations. The main focus of these wildland firefighter camps is for proximity of the fire. In the guide for fire base camps, sanitation is vaguely mentioned [3].

Recently, there have been a number of foodborne outbreaks at fire base camps [4,5]. Wildland fires can involve a few personnel up to a thousand and engine companies from around the United States and other countries [6,7]. Accumulation of such a large number of people fundamentally makes a base camp a small town. For example, one wildland fire in Quinalt, WA, the Paradise Fire was employing 66 personnel on June 26, 2015 [8]. A group this size would require housing, food services, medical aid, and other requirements to sustain the working population. An infectious disease outbreak could greatly limit the number of personnel available to fight the fire and provide support to the mission, which was observed in the Black Canyon fire in 2011 [9]. The importance of disease outbreaks in fire base camps has been noted by the US Department of the Interior through a memo by David Wong in 2009 [6]. Wong's (2009) memo even notes a norovirus outbreak at a fire camp in Nevada that resulted in over 100 people becoming sick and requiring the camp to be "demobilized" before completion of the mission.

Although, there are many types and forms of infectious disease and this issue has only recently become well recognized in the occupational environment [10], a major concern today is food poisoning. However, this is not the only "form" of infectious disease of concern in this occupational population (Wildland firefighters) (e.g. pertussis). Britton et al. (2014) noted there are few rules, policy or regulations regarding food safety for firefighters. Most would consider this an environmental issue and hazard, but since some of the personnel are performing this activity as an occupation it is also within the realm of occupational health, including industrial hygiene. Few safety officers for fire companies are trained in sanitation making it even more difficult to prevent foodborne events. This is further complicated by much of the food being supplied by caterers. Since wildfires often rapidly expand, this can result in a rushed scenario in obtaining suppliers and providing them limited time for preparation of a large number of meals and

establishing sanitary conditions at a remote camp.

Traditionally, industrial hygiene and occupational health in general did not consider infectious disease a major topic within these subject areas [10]. Until recently, little consideration has been given to infectious disease as an occupational hazard, except those in the medical professions. When the subject is addressed, it is mostly related to specific industries such as slaughter houses. In most texts on these issues there is fundamentally no mention of food poisoning or food-related hazards. However, as shown in recent reports, this can be a major occupational hazard of workers in specific occupations (e.g. wildland firefighters at Elbow Pass) [5]. Today, most would consider the report at Elbow Pass fire to be an isolated event, but when examining posts on the internet, it is not and may be common, yet unrecognized [6]. In 2009, there was an investigation by the county health department of a gastrointestinal outbreak at the Red Rocks Fire [11]. In this case, it was reported that 24 firefighters became sick with some form of gastrointestinal illness. This report; although less detailed, is similar to the article by Britton who investigated at the Black Canyon Fire located in the Challis National Forest (Idaho) where confirmation of a norovirus outbreak occurred at a fire camp. The Black Canyon episode involved 30 out of 180 respondents who were from Idaho, New Mexico, Colorado, Nevada, Utah and Wyoming [9].

The norovirus is the foodborne illness most commonly discussed in reports on food outbreaks at fire camps. This virus is easily transmitted and difficult to control. It is also the agent commonly observed causing gastrointestinal outbreaks on cruise ships. However, this is only one of many potential agents that can cause a foodborne event. Organisms that commonly causes food poisoning include the viruses, bacteria and parasites. Under some conditions, algae and fungi can also be involved, but less commonly. Most of the issue related to outbreaks involves improper sanitation (e.g. hand washing), time and temperature abuse and failing to properly cook/preserve food items. Conditions at a base camp are ideal for occurrence of food poisoning and the "atmosphere" and work conditions result in food safety being a low priority. Requirements for proper sanitation are not unique to fire camps, but are well established in the food industry. Many of the "standard" conditions applied to restaurants should also be included at base camps.

Summary

Food safeties, mostly related to foodborne illness, are being seen in occupational settings, especially in wildland firefighters. Recent outbreaks associated with fire camps have raised the awareness of food

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safety. These concerns have even been vaguely addressed in training documents discussing wildland firefighting. As the number of large wildland fires continues to rise, problems of foodborne disease in this occupational group will increase. This raises the need for additional awareness and future research on the subject. Foodborne disease is a new arena for occupational health, one that requires attention.

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