

# Safety in Wildland Fire Suppression

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## Abstract

This paper will address the risks and hazards involved in wildland fire suppression operations, including the physical, societal and human factors that impact firefighter safety. It will discuss several specific examples of failures in firefighter safety, and look at the overall number of fatalities that occurred in a specific country over a seventeen year period (1990-2006). The paper will then offer some potential methods to improve safety in wildland fire operations, and will introduce a new initiative by the International Association of Wildland Fire (IAWF) to document and study world-wide firefighter fatalities and serious injuries on wildland fires.

## Introduction

Wildland fire suppression operations occur daily around the world, and are, under the best of circumstances, a high risk endeavor by those involved. Each year, hundreds of wildland firefighters die or are seriously injured fighting wildfires. The causes of these injuries and fatalities are as diverse as the areas that the fires are fought: burnovers, vehicle accidents, heart attacks and other medical causes, aircraft crashes, falling trees and a variety of other causes have killed, and continue to kill firefighters in the wildlands.

There are many reasons that these well-known causes of death and injury continue to affect wildland firefighters around the world. First, there is the firefighter, and their attitudes and approaches to their jobs: some have a “Hero” attitude that assumes that taking risks is part of the job, and that death on the fireline makes them a hero in the eyes of their peers and the communities they serve. Others have no sense of their “situational awareness”, especially as it relates to the physical forces of nature that affect fire behavior like weather, fuels and topography. This lack of awareness about changing wind speeds and direction, the “chimney effect” of topography, or the dryness of the fuels as the fire burns into the hottest and driest period of the day has resulted in numerous injuries and deaths. Besides the individual firefighter’s attitudes, there are also strong political and societal expectations that firefighters, fire managers and fire agencies are subjected to by the public they serve: these included unreasonable expectations about suppression capabilities in the face of severe fire behavior events, protection of “at risk” structures and resources of high value to the community or influential individuals; and nearly non-stop media coverage of all wildfire events and the suppression actions taken on them. These problems are especially prevalent in those areas known as the wildland-urban interface (WUI), where firefighters are often working to protect their neighbor’s homes.

Other factors that result in safety problems during wildland fire suppression operations include the unknown effects of global warming on live fuel moisture,

resulting in unexpected fire behavior events; inadequate training in the basics of wildland fire suppression and fire behavior, especially in the volunteer work fire workforce in many countries; the lack of adequate communications equipment and capabilities that preclude the sharing of critical information to insure safe operations; vehicle operations on primitive roads, under conditions of heavy smoke and dust, with increased braking distances due to heavy vehicle weights caused by water carrying tanks; and incomplete information reaching the on-the-ground firefighters about all of the factors affecting fire behavior specific to their fires, such as changes in wind speed and direction, or frontal passages.

In the United States, for example, three hundred six (306) persons died while involved in wildland fire operations from 1990-2006; this included 64 firefighters who died from burnovers during that period. (See Table #1).

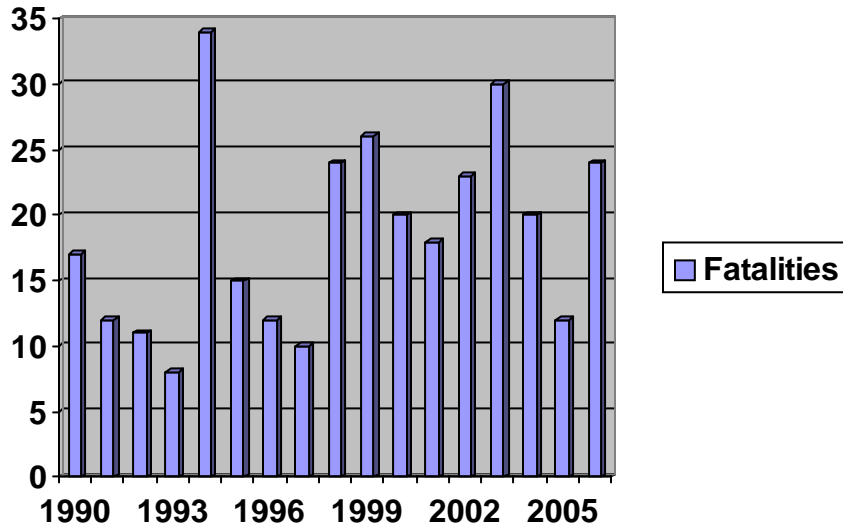


Table 1. US Wildland Fire Fatalities, 1990-2006 (Mangan, in press)

### ***Challenges for the World’s Fire Community***

Before we can address the potential solutions to the injuries and deaths that occur on wildland fire suppression operations, we must first stop and reflect on the underlying factors that have taken us to our current situation.

Fire Managers and organizations must first quantitatively identify those events that are causing death and injury among wildland firefighters; a vigorous investigation protocol is essential to look in-depth at all of the causal factors leading up to each death and serious injury.

On a regular, periodic basis there must be a trend analysis of these event, both at the local and international levels to clearly show fire managers where shortcomings in safety policies and procedures exist, and opportunities for improvement can be exploited.

It is essential that the “provincial attitudes” of fire agencies, and indeed of major geographic entities and countries, must be cast aside so that firefighters world-wide can benefit from the knowledge gained from accidents and fatalities in order to increase safe practices on the fireline.

There must be an openness among fire personnel and agencies to openly acknowledge failures and shortcomings in performance and policies, not for the purpose of taking disciplinary actions, but to serve as a platform for “Lessons Learned” to avoid similar events on future fires. This will require fire personnel and agencies alike to put aside feelings of pride, ego and fear of shame in order to serve the larger needs of the global wildland fire community.

## **Improving Wildland Fire Safety in the 21<sup>st</sup> Century**

While many challenges face the world’s wildfire community in the coming years, I believe that significant gains can be made to reduce the numbers of fatalities and serious injuries that occur during wildland fire suppression operations around the world:

First, there must be adequate levels of training available and adhered to throughout the fire organization, from the firefighter to the fire leader, and on up to the Fire manager at the top of the organizational structure. This training, besides covering the basic fire suppression skills and knowledge, must emphasize the importance of safety in all stages of an operation;

Next, there must be appropriate personal protective clothing and equipment (PPE) available for all fire personnel so that when fire activity does threaten their safety, the PPE gives them an opportunity to escape without injury. Different groups across the world (ISO, Canadian General Standards Board, National Fire Protection Association, etc) have on-going project to develop and improve standards for this equipment, and these efforts deserve our cooperation and support;

The “Lessons Learned” from wildfire fatalities and serious injuries MUST be shared with all others in our business so that firefighters around the world can learn from the misfortunes of the compatriots in other countries. There must be a clearly identified focal point or clearinghouse for this information to insure its dissemination world-wide in a timely manner;

Because of the increasing complexities of being the Commander on wildland fire incidents (live and dead fuel moistures impacted by global warming, fuel buildups, wildland-urban interface, and other factors), the use of a designated “Safety Officer” to focus exclusively on safety issues becomes evenb more critical, especially on those emerging fires that are escaping the initial attack efforts and will require additional suppression resources and time before suppressio9n objectives are achieved. The Safety Officer serves a primary advisor to the Incident Commander, and can be a key player in reducing fatalities and serious injuries;

And lastly, if a safety program is to be successful, there must be individual responsibility and accountability at all levels of the organization, for the newest

firefighter to the most senior fire leader/manager. This responsibility and accountability must recognize the positive contributions towards fire safety as well as identifying shortcomings in performance that results in injury or death. Without responsibility and accountability, no wildland fire safety program can ever become fully successful.

### **An IAWF Initiative for Wildland Fire Safety in the 21<sup>st</sup> Century**

Without a full understanding of the specific and unique causes of fatalities and serious injuries on wildland fire throughout the world, it is impossible to move forward in identifying potential solutions for the problem.

For that reason, the International Association of Wildland Fire (IAWF) is pleased to announce our intent to launch, at this important *Wildfire 2007* Conference, a NEW initiative to establish a new system to record, document and analyze the serious injuries and deaths of wildland firefighters around the world, beginning with the calendar year 2007 fires. This database is intended to serve as the world's focal point for reporting these events so that the firefighting community can keep informed and share lessons learned in order to prevent similar events in the future.

Input to this database will allow IAWF to prepare quarterly and annual summaries and analysis of events world-wide, and begin developing recommended changes to practices and procedures that will help mitigate future events.

Specific information about accessing the IAWF database and inputting reports will be available on the IAWF website by June 1, 2007 at [www.iawfonline.org](http://www.iawfonline.org).

### **Closing**

In spite of our best intentions, suppressing wildland fires will remain a dangerous job. Our best hope to minimize and mitigate the risks associated with it is to acknowledge and identify the risks and hazards; share information and trends about tragic events that occur; and move forward to mitigate those risks on a world-wide basis for the future safety of all of our firefighters.

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