

A Dream, A Team, A Theme: Your Portal to Zero Defect Wildland Fire Safety

Robert W. Mutch

DEDICATION

The Keynote presentation is dedicated to the memory of Jeff Allen and Shane Heath, Idaho, 2003; Steve Rucker, southern California, 2003; and the 21 civilians who died in the southern California wildfires, 2003.

INTRODUCTION

A Corporate Advisor reported on National Public Radio that success is equated with the degree to which organizations integrate a dream, a team, and a theme in the conduct of its Mission. That concept is equally applicable to our fire business. The keys for implementing successful wildland fire safety programs can be defined as follows:

A Dream: All wildland fires are survivable by all people with Zero Defects.

A Team: The integration of personnel from the Fire Services, Law Enforcement, WUI residents, the National Weather Service, Research, and other cooperators to define, refine, and implement the fire safety theme on local, regional, and national scales.

A Theme: Developing and applying a template for Systematic Wildland Fire Safety to support policies and practices for Zero Defects (no injuries or fatalities).

The objectives of this Keynote presentation are to:

- Highlight the value of a Dream, a Team, and a Theme in Fire Safety
- Propose Zero Defects as Our Safety Goal
- Present a Systematic Fire Safety Template
- Present a Mindful safety example from the 2003 fire season
- Review Accident and Disaster definitions and issues
- Recommend a proactive WUI Strategy

A PORTAL TO WILDLAND FIRE SAFETY

In 1976 I served as the fire behavior specialist on the fatality investigation review team on the Battlement Fire near Grand Junction, Colorado. For several days the team, under the direction of Team Leader Max Peterson, collected information, tracked down significant photo documentation, interviewed firefighters, analyzed weather and fire behavior data, and prepared a report of findings. This was the wildfire where retardant

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pilot Don Goodman of Missoula, Montana, died in a plane crash the day before the three Hotshots from the Mormon Lake crew were killed on a ridgetop as fire swept up a steep chute from a burnout fire set far below by another crew from the Coconino National Forest in Arizona. The crew burning out did not know there was a crew above them; and the crew on the ridge did not know that a crew from their own Forest was burning out directly below them. Appropriately a lot of attention today is being devoted to the importance of situational awareness and understanding, but on this day in Colorado in July 1976, situational awareness was nil.

Interviews with surviving crew member John Gibson at a burn ward in Texas and with personnel from the Coconino—coupled with knowledge of the last movements of the victims as they lay down on the ridgetop fireline just ahead of a high intensity burnover in Gambel's oak—left a permanent impression of tragic errors, suffering, and death. From that point forward my fire outlook changed forever—the new outlook was one focused on doing everything possible to spread the “lessons learned” to others all the time, everywhere, every way. That outlook was why I could not say no to the invitation to speak at this Safety Summit, because we all know that we have serious unfinished business.

Because this “passion for safety” is so deep-seated, I took immediate notice of the remarks made by Kelly Close following his experience as a Fire Behavior Analyst on the Cramer Fire investigation team in 2003. He, too, went through a career defining catharsis. Because his journey during the fatality investigation mirrored mine, I followed his words intently: “I don't have all the answers, and will always be searching and learning. The Cramer Fire has forever changed how I look at my role as an FBAN. Not just on fires, but in interagency training courses and firefighter training and annual safety refresher classes within my own organization. It's becoming very apparent to me that the primary role of the FBAN **must** be for firefighter safety”.

Finally a friend recently placed a very meaningful name on this haunting feeling that has followed me since Battlement—a feeling that has placed human safety as the number one priority. We are indebted to Paul Chamberlin for describing the concept of a fire safety **Portal**. He reported (2004) that career firefighters can pass through a “safety awareness portal” where new perspectives are achieved and their reality is meaningfully altered. He went on to say that transiting the Portal is often related to traumatic events. He likened the transiting of the Portal to a wake-up call; and he projected optimism that well-conceived fire safety initiatives can assist people in transiting the Portal without personal trauma. Certainly a worthy goal for each of us to strive towards as we attempt to institutionalize lessons learned.

So 28 years after Battlement, I now have a measure of closure in knowing that passing through the Portal has very possibly been life-altering and beneficial for many.

RAISE THE BAR FOR FIRE SAFETY

At a recent fire training session in Tucson, one participant presented a view that may be shared by many. This person stated that “I think that we will continue to have fatalities because we are human and will make mistakes.” Is that a statement of the fire safety commitment we want to project for ourselves? Or does this simplistic expression represent a highly un-mindful intention? Is it this kind of view that too often turns into a self-fulfilling prophecy?

The introduction to this paper suggested that we embrace a vision, or dream, of Zero Defect fire safety—in other words a fire environment where injuries and fatalities do not occur. Equally un-mindful is the Opinion Piece written directly after the Storm King Fire that said firefighters break the 10 Standard Orders all the time to keep a fire small. Neither one of these positions is helpful in keeping people out of harm's way.

Remember that our earlier stated Theme called for developing and applying a template for Systematic Wildland Fire Safety to support policies and practices for Zero Defects (no injuries or fatalities). Let's take a look at that Template:

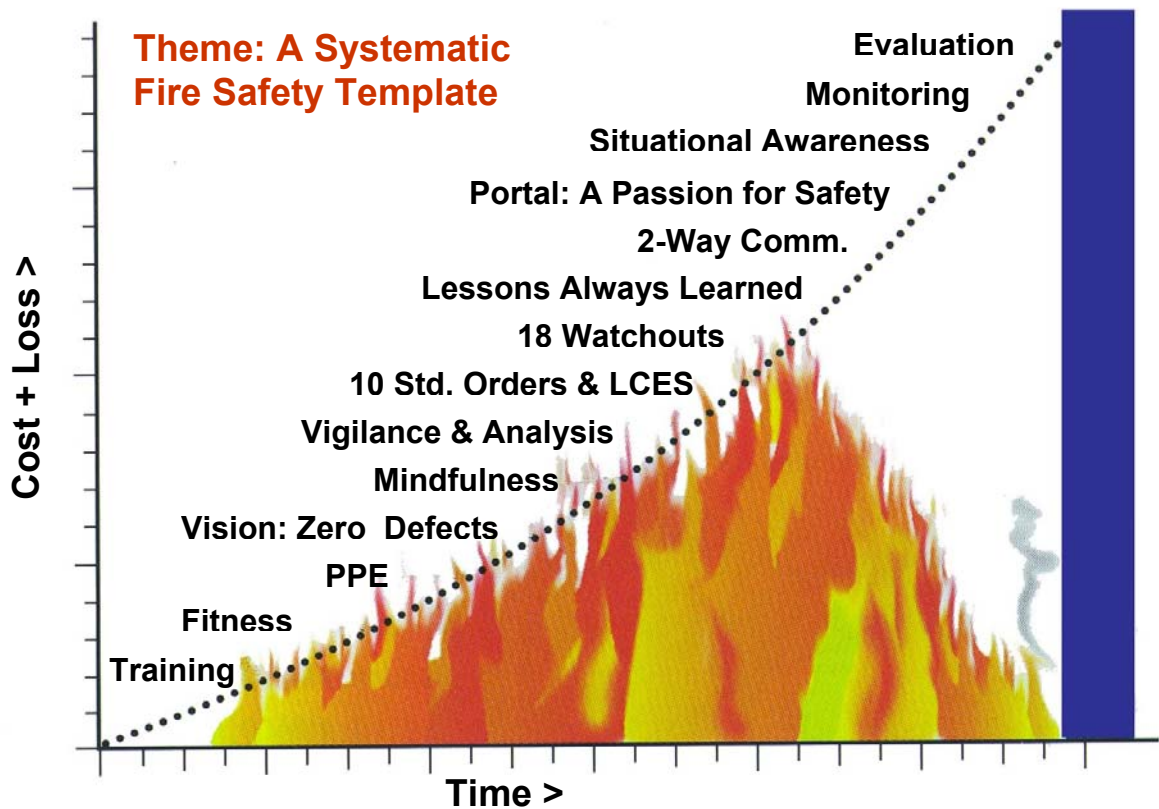


Figure 1. A Systematic Wildland Fire Safety Template. The longer it takes to carry out the fire safety elements represented along the curve, the greater will be the costs and losses to human well being. If some of these elements are omitted during a fire response, it is a given that unwanted outcomes will occur.

The above fire safety elements arrayed along the curve are not aligned in a priority order, but it might be instructive to provide some discussion of them:

- The importance of adequate fire training, physical fitness, and the use of personal protective equipment are givens as we prepare people to safely encounter wildfires and prescribed fires each year.

- Also, basic to safety preparations is the commitment of people to the 10 Standard Fire Orders, LCES, and the 18 Watch-outs (along with other safety imperatives).
- The simple reliance on Mindfulness is an ancient practice that goes back some 2500 years to Buddha. Mindfulness requires a complete engagement with the present moment, without worrying about the past which is forever gone or being concerned about a future that has not arrived yet. Dwelling in the past and/or the future is a serious distraction that detracts from a complete focus on the present fire situation. Mindfulness on the fire ground might be likened to such a simple practice as Jim Cook's 3 L's ("Look Up, Look Down, Look Around")—in other words remaining fully engaged with the all-important fire environment in which we work.
- Weick and Sutcliffe (2001) have helped us understand a more rigorous application of Mindfulness to enhance a high reliability response to wildfires: a preoccupation with failure, a reluctance to simplify interpretations, a sensitivity to operations, a commitment to resilience, and a deference to expertise.
- Developing a vision, or dream, that champions the idea of zero defect fire safety.
- Continuing to apply vigilance and analysis to the constantly evolving fire situation.
- Following the Cramer Fire an Idaho reporter asked if there were some new extenuating circumstances that contributed to the deaths of Jeff Allen and Shane Heath. The answer to his question was much simpler: "Lessons Never Learned". Helping make the transition from Lessons Never Learned to Lessons Always Learned is a passage that each of us must be fully engaged in to achieve successful results.
- Since the Storm King Fire, much has been said about the importance of respectful two-way communications. That dialogue must be kept viable and on-going. Anyone on an incident may have the best pair of eyes for sharing a critical observation. We always need to be open to feedback and the sharing of knowledge.
- Developing a meaningful Portal to Safety experience for all is undoubtedly doable. If we do this in a skillful manner, we can provide all firefighters with a career-long dedication to safety without the exposure to personal trauma.
- Finally, situational awareness, monitoring, and evaluation at all levels of the organization will allow us to stay abreast of current developments—and make those necessary changes to continue to prevent accidents and disasters.

MINDFULNESS TOWARDS SAFETY: A 2003 EXAMPLE

AREA COMMAND'S "SKUNK WORKS": TAKING THE PULSE OF INCIDENTS

Area Commander Rex Mann's commitment to fireline safety in Montana's Northwest Area in 2003 included the staffing of a "Skunk Works". Although the two skunks carried the title of Technical Specialists for Rex Mann's AC Team, great latitude was provided to run their traplines everyday depending on Area Command's priorities. The specialists brought both operational skills and fire behavior skills to the "works" to provide a variety of input for consideration as decisions were made by Area Command and the Incidents.

Briefings provided by AC Rex Mann to the two technical specialists clearly and consistently demonstrated his commitment to a preoccupation with what might go wrong, a reluctance to simplify interpretations, a sensitivity to field operations on many complex incidents, a commitment to resilience, and a deference to expertise.

During the course of their travels the Technical Specialists commonly met with Line Officers, IC's, Deputy IC's, FBAN's, IMET's, interagency representatives, and the media. Feedback to Area Command, IMT's, Flathead National Forest, DNRC, and Glacier National Park often was carried out in an informal manner. But information also was provided in written reports, Fire Behavior Advisories, PowerPoint programs, safety messages, and digital images. At one point a Fire Behavior folder was created on the ftp: site so that new information could be easily communicated. The ftp: site communicated information so well that on September 7 a fire person called from Region 6 and asked if the material on Safety Considerations for Plume Dominated Fires could be used on one of their major incidents in Oregon.

Objectives for the "Works". The Works served as a link between Area Command and the fires in many different capacities:

- Intelligence gathering
- Serve as a link between Incidents and the Fire Lab's FARSITE projection team
- Daily interactions with IMET's and FBAN's
- Input to team briefings regarding the severity of the current situation
- Issuing fire behavior advisories to keep the focus on firefighter safety
- Conduct overflights to provide an assessment of the larger picture
- Work with the media on forest health decline, historic fire behavior, and season-ending requirements
- Coordinating with Agency Administrators as directed
- Assessing threats to the interface and recommending solutions

- Review Incident burn-out plans and provide advice
- Speak at public meetings to provide an overview of the fire situation

These are some of the responsibilities the Works carried out as the Area Command Team analyzed the overall situation and developed priorities for critical resources to fill the needs of the numerous Incident Management Teams in NW Montana.

Recommendations. There is a wealth of information on the Internet that needs to be integrated into the operation of “The Works”. Three of the most useful sites are:

1. www.wrh.noaa.gov/missoula
2. <ftp://ftp2.fs.fed.us/incoming/r1/flathead/>
3. www.nifc.gov

There simply was not sufficient time to run the traplines daily and also track and record the vital information found on the above websites and other sites. When strong pre-frontal winds were forecast for September 7, a person in the Situation Unit was asked to track several upwind RAWS and local RAWS stations to note wind speed, direction, temperature, and humidity on an hourly basis. This type of situational tracking needs to be done on a continuing basis.

Recommendation: The Works should be expanded in the future to include a Situation Unit Leader. This position could also help document the two-way flow of information between FBAN’s and Area Command.

Meteorological assistance was provided by the IMET at Robert who was centrally located within the NW Montana Area Command. Although this IMET was principally responsible to provide forecast services for the Robert Complex, the individual made time available to furnish counsel and forecasts to Area Command.

Recommendation: Discuss IMET contributions at the outset for Area Command and communicate that need to the appropriate IMT. For an Area Command as geographically large as NW Montana Area Command, consider the assignment of an IMET to Area Command.

The 1000 Fire Weather conference call for users was especially helpful. Useful outlooks were provided in a timely manner and there were opportunities for Area Command and Incident representatives to ask questions of meteorologists and to share information with each other.

Recommendation: Maintain the concept of the Fire Weather Conference Call in the future and make sure that all users know of its existence. Post a summary of issues covered on the wrh/noaa website daily for those who miss the call.

A culmination of the application of Weick's and Sutcliffe's 5 mindfulness principles occurred on August 26 when AC Rex Mann called for a "Safety Stand Down" with the following objectives:

"As a result of the predicted weather for the next several days we are asking that teams and supervisors place special emphasis on safety consequences of extreme fire behavior. Area Commander Rex Mann is requesting that each incident participate in a total "stand down" prior to 1000 hrs. This stand down should last a total of 20 minutes. This stand down is being requested as a result of increased fire behavior that has been experienced on 8-25 and the prediction for increased fire behavior through 8-27. Supervisor's should focus their safety stand down discussion with fire fighters and associated personnel on the following key issues:

- Previous moderate fire weather days have passed
- Predicted fire weather for the next several days consists of low humidities (perhaps single digits in some locations), high winds, Haines indexes of 4 or 5 (with potential for 6), temperatures back in the 90's, Fire Weather Watches, and Thursday's potential high pressure induced east winds.
- ERC's continue to be at ALL TIME highs and are above the maximum levels indicated on your pocket cards
- Resulting fire behavior can range from sustained wind driven runs, plume dominated fire behavior (or a combination of the two), and fire behavior resulting from collapsing columns
- The effects the above fire behavior parameters have on Fire Fighter Safety

Safety messages in the IAP's for 8-26 thru this period should focus on these issues. All conditions are lined up to produce fire behavior that generated fires that define our past. Locally among them are Red Bench and Moose on the North Fork, Canyon Creek in the Bob Marshall and the Yellowstone fires of 1988. Fire behavior on the 30-mile fire was associated with similar weather events.

To assist firefighters in providing the necessary margin of safety, fire weather and fire behavior indicators are being developed and will be provided tomorrow. If these extreme fire behavior conditions develop, they will trigger an immediate change in fire tactics, These may range from defensive tactics to potentially full disengagement, depending on site specific conditions."

(Note: On August 26 all firefighters on at least 10 major incidents participated in the 20-minute Safety Stand Down to ensure that all understood the severity of prevailing conditions and had the opportunity to interact regarding any concerns.)

The Northwest Area Command in 2003 in Montana served as an excellent example of leadership providing the initiative for a proactive and mindful safety environment on a

continuing basis. Such a mindful approach to fireline safety is as applicable to the needs on initial attack incidents and emerging larger fires as it is to the largest incidents.

ACCIDENTS AND DISASTERS: DEFINITIONS AND ISSUES

Declining ecosystem health in many areas is setting the stage for firefighters to be facing extreme fire behavior situations much more frequently now and in the future. In fact, Region 3 of the Forest Service issued a special fire behavior alert for wildfire personnel dispatched to southwest fires in 1994. This alert called attention to the fact that there were especially dry conditions and a widespread distribution of ladder fuels in the ponderosa pine type. This situation comes as no surprise to astute observers of the fire literature. As long ago as 1943, Harold Weaver stated in a Journal of Forestry article that the “complete prevention of forest fires in the ponderosa pine region of California, Oregon, Washington, northern Idaho, and western Montana has certain undesirable ecological and silvicultural effects - conditions are already deplorable and are becoming increasingly serious over large areas.” That prophetic observation was made over 50 years ago--and today we are experiencing a forest decline in long-needled pine ecosystems that is posing a major threat to people, property, and natural resources.

With that backdrop of worsening fire behavior conditions, let’s briefly review Turner’s (1976) definitions of accident and disaster:

Accident: An accident is simply a result of an individual’s failure to conform to existing precautions.

Disaster: An event, concentrated in time and space, which threatens people with major unwanted consequences as a result of the collapse of precautions which had previously been culturally accepted as adequate.

The frightening and debilitating aspect of a disaster is that it can occur even when people believe they are taking all prudent precautions to keep people safe. The antidote for preventing disaster lies in mindfulness, constant vigilance to changing conditions, and insightful situational awareness that modifies precautions as the environmental situation changes over time. Let’s account for some of the changes in our fire environment in recent times:

- Use of a helitorch 60 feet above terrain, rather than a torch in one’s hand.
- Declining ecosystem health with a major increase in fuel accumulation and fire intensity.
- A great increase in the numbers of people living in the Wildland/Urban Interface.
- A dramatic increase in the size of prescribed burning units.

Have we approached these significant changes with mindful attention, enacting appropriate new precautions to keep people out of harm’s way? Or are we continuing with business as usual, attempting to prevent accidents and ignoring disasters that may

still be lurking in the incubation period. Are you aware that as recently as the 2003 fire season we were still dropping flaming alumagel on crew members? On that burn-out operation the winds picked up during firing and the small helicopter was no longer adequate for the assignment, but the burn-out continued with a marginal helicopter.

Also, is it still business as usual in the Wildland/Urban Interface, even though the problem there has been compounded by the influx of huge numbers of people coupled with worsening conditions for extreme fire behavior. In October and early November in southern California in 2003 21 civilians and 1 firefighter were killed. Many of the civilians apparently died as they were attempting to evacuate on foot or in a vehicle. Is there a safer alternative to our traditional approach of simply evacuating people out of harm's way?

The Southern California Firestorm 2003 report produced by the Wildland Fire Lessons Learned Center in Arizona paid scant attention to the 22 fatalities that occurred. The After Action Report to the Governor of California also had little to say about the civilian casualties. How is it that we can turn such a deaf ear to a problem that is crying out to be solved?

In the interest of mindfulness towards this serious issue, the next section is devoted to a strategy that has been successfully developed and applied by our Australian colleagues to help people in the interface help themselves. This approach is certainly worthy of our attention. We have just as important a responsibility to civilian well-being as we do to firefighter well-being.

PREPARE, STAY, AND DEFEND—THE ULTIMATE IN TEAMWORK

In many parts of the world the primary response is to evacuate all people threatened by wildfires. But fire experiences in Australia have demonstrated time and again that “houses protect people and people protect houses.” Obviously, zones of defensible space around homes must be established in advance of fires; and the young, elderly, and infirm generally are evacuated well ahead of the fire. Communities at risk from wildfires should be encouraged to be responsible for their own safety, because Fire Service personnel may not be available when burning conditions are severe.

Tasmania Fire Service Policy has provided guidance on bushfire safety and evacuation decision making called “Prepare, Stay, and Defend”.¹ When there is a wildfire in Australia people are told to go home and assist in the protection of their property. Since human lives and property values are at risk when threatened by wildfires, exemplary cooperation and teamwork are required to ensure adequate safety margins. Team members identified for reducing the loss of life and property include State agencies, local government, the communities, and individuals.

The wildland/urban interface **Dream** would be one where houses are able to survive fires even when Fire Services personnel are not available. The **Team** would consist of the effective partnership between Fire Services and home dwellers. The **Theme** would comprise the dual strategy of adequate defensible space coupled with the home dweller's motivation to remain on-site as an important factor in suppressing ember fires.

During the 2000 fire season in western Montana neighbors took it upon themselves to stay with their homes as flame fronts advanced, creating defensible space, installing

¹ “Prepare, Stay, and Survive”. John B. Gledhill, Tasmania Fire Service, Wildfire Magazine, International Association of Wildland Fire, 10 p.

sprinkler systems, fighting fire, and providing local intelligence to incoming Fire Service personnel. No home was lost as people demonstrated responsibility for their own well-being.—and worked in concert with the Fire Services.

EVACUATE OR STAY?

State law in Montana specifies that people cannot be forced to evacuate their homes when a fire occurs. Instead, they sign a waiver releasing local authorities of any responsibility should serious problems arise. Despite such a law, fire services and law enforcement personnel typically like to remove people from the fire area to get them out of the way. When people refuse to leave in Montana, they may be threatened by law enforcement personnel with such statements as: “What is the phone number of next of kin, so they can be called to identify the body?” Or this: “What is the phone number of the dentist, so that dental records can be used to identify the body?” Clearly such strong arm measures create an attitude among the people who live in the wildland/urban interface that they should evacuate because it is not safe to stay.

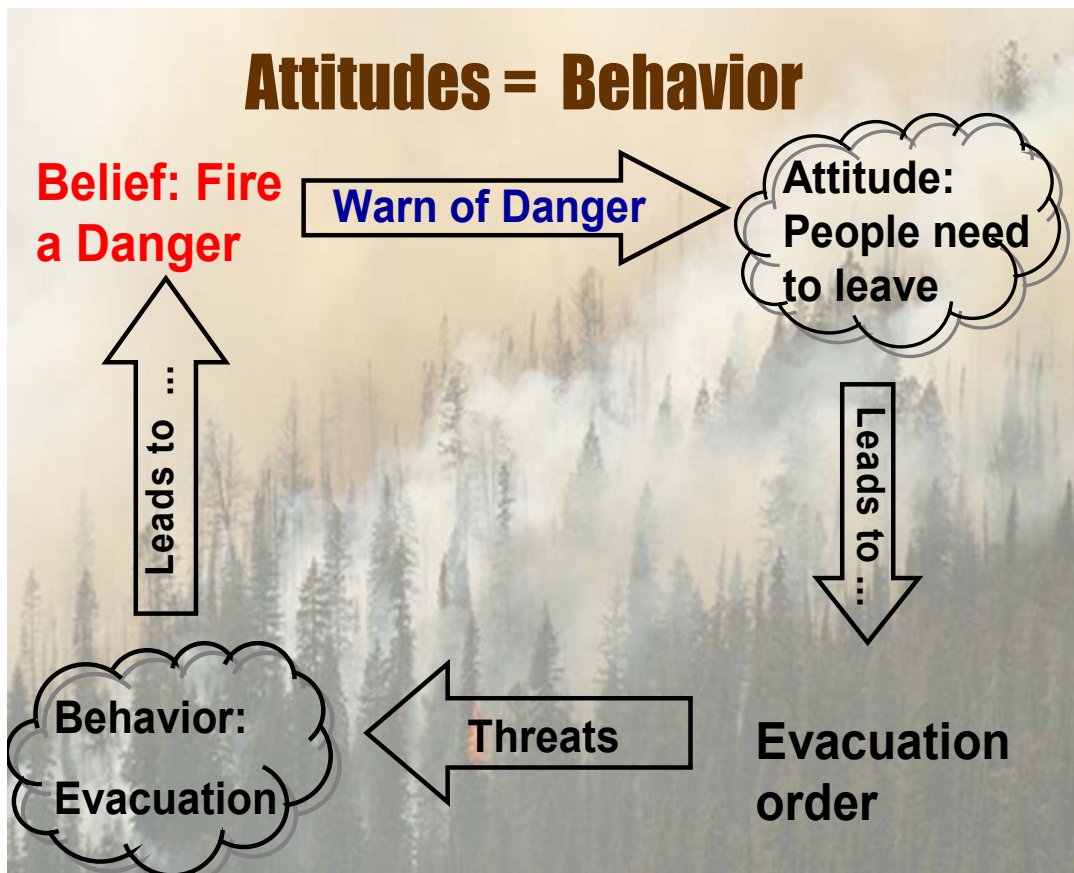


Fig.1. People in the United States are warned that fire is dangerous and that they need to evacuate. This scare tactic approach reinforces the idea that fires are always dangerous and people must leave their homes.

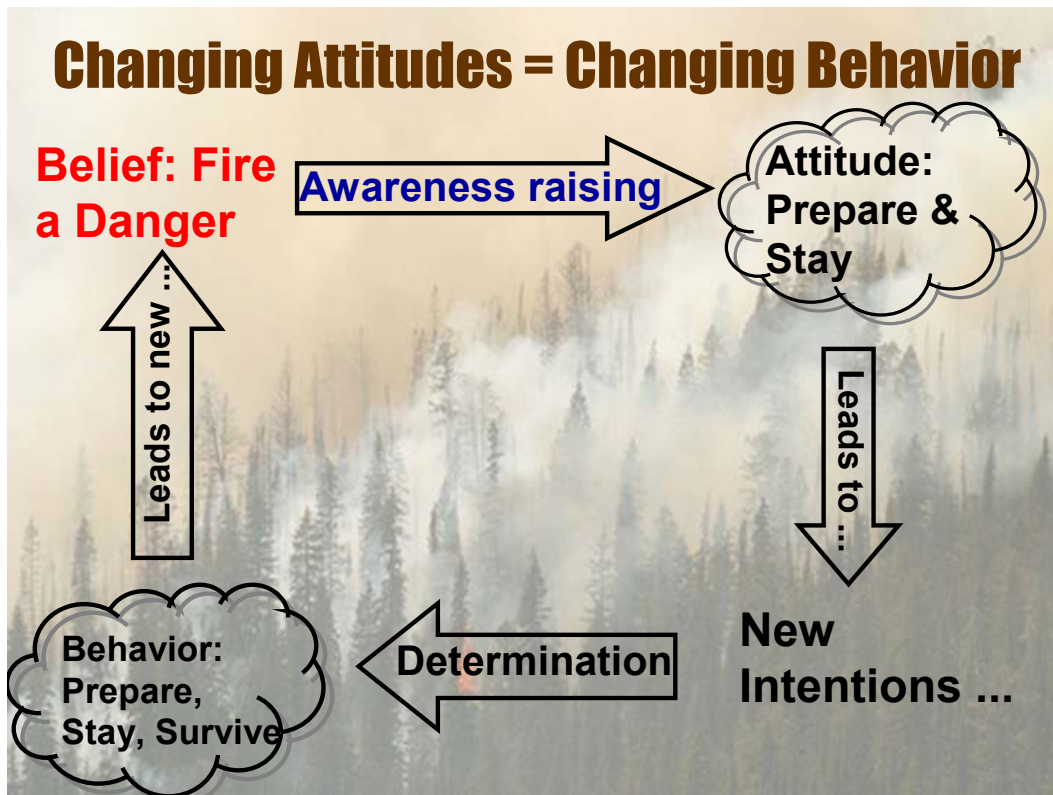


Fig. 2. People are informed that they can prepare, stay, and defend in Australia. A large number of people in Australia do prepare their homes to be fire safe in advance of fires, they remain with their homes to help fight small fires on their property, and people and property generally survive very well. People understand that fires can be dangerous, but they develop a new belief that with proper precautions they can remain and be an important part of the solution in the wildland/urban interface.

The model in the United States is generally like Fig. 1 where people are warned of the dangers of fires and told to evacuate. The two figures are patterned after Fishbein's model of human behavior. In southern California in 2003, many of the 22 people who died were in the process of evacuating their homes when they were trapped by the fires. In some cases their homes survived while they died.

There have been applications of this Australian approach in the United States in 2000 and 2003 and people prepared, stayed, and defended despite evacuation orders. This approach, however, has not been institutionalized like it has been in Australia.

The Australian model, depicted in Fig. 2, has the fire services and the homeowners working in a close partnership that specifies how to prepare and stay as an integral part of the interface solution. (Note: Figures 1 and 2 are based on Fishbein's and Azjen's (1975) definitions of belief, attitude, intention, and behavior).

It is the belief in the Tasmania Fire Service that empowering the communities at risk from fire to play an active part in their own protection is a viable long term strategy to enable safe co-existence with fire as an element of nature.

CONCLUSIONS

We have advanced the idea that wildland fire safety can be enhanced by the development of a Team, A Dream, and a Theme to achieve the goal of Zero Defects—in other words, no injuries or fatalities during the conduct of our fire use, prescribed fire, and wildfire business. Such an undertaking leads us away from the un-mindful (mindless?) position that firefighting is dangerous, people will make mistakes, and bad things will sometimes happen. Under that premise we can simply say “I told you so!” when the bad event occurs. With a commitment to zero defects, when an injury or worse happens we are immediately placed on notice that an intolerable action has occurred that must be corrected. Or better yet we will become so much more mindful because we are anticipating the worst that we prevent the unwanted outcome from happening in the first place.

Foundation blocks of the Fire Safety Template that was presented include an unrelenting Mindfulness, an abiding Situational Awareness, and a process to permit all to transit the life-changing Portal to Safety without personal trauma. This is a journey worth embarking upon with skill and enthusiasm to better safeguard the well-being of all civilians and firefighters in the future.

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First fire work with the Forest Service was as a smokejumper in Missoula, Montana, in the mid-1950's. Later served for 11 years on a national Type I fire suppression team as a Fire Behavior Analyst.

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