



# SAFETY

IN A DANGEROUS PROFESSION

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## Safety in a Dangerous Profession

- Firefighting is a dangerous business. Because fire is a living, breathing, moving, complex, and variable phenomena, it is very difficult to predict every hazard and risk firefighters might face.
- Unfortunately, this is not a perfect world. Not only do we not understand every nuance of fire chemistry and behavior, but wildfires seem to be evolving into bigger, meaner, more catastrophic events.





## Safety in a Dangerous Profession

- Whatever the cause(s), we're seeing greater numbers of large, damaging, and dangerous fires worldwide. And every year, wildland firefighters are killed or seriously injured on the fireline.
- While better safety equipment, stringent safety rules, and additional training are important to reducing the risks faced by wildland firefighters, the best way to make the fireground safer is to improve every firefighter's awareness of and attitude toward safety.





# What is Safety all About?

- Unfortunately, as firefighters, we do much of our work in someone else's environment, where we have little control over the hazards that are present or the other factors that govern the origin and spread of fire.
- However, in the wildland fire business, we have no way to mitigate the two factors that have the greatest influence on fire behaviour — weather and topography.
- In this very dangerous workplace, not only do we need safety officers, we need everybody to be a safety officer







# How can we Build a Safer Firefighter?

- Improve Attitudes

- Safety is not a science or a discipline or a component of a plan.
- Safety is an attitude.
- Good leaders lead by example and are always “dressed for the occasion.”

- Empower Firefighters

- All employees, clear down to the rookie seasonal firefighter, must be empowered to be full-time safety officers, both in the station and on the fireline.





# How can we Build a Safer Firefighter?

- Provide Realistic Training.
  - Safety and training go hand-in-hand.
  - Training must be a high priority at all levels of the organization.
  - Comprehensive safety training means more than being able to regurgitate the orders, watchouts, and guidelines. It means that safety is ingrained into our thinking and our work habits in both routine and emergency environments.
  - Train as you will fight, with all of the stress and realism that is possible.
- Improve Equipment.
  - Agencies should purchase enough equipment to ensure that safety will never be compromised because replacements weren't available when something was lost or damaged.





# Rules of Engagement

- Wildland fire safety has an increasingly complicated set of rules, guidelines, and reminders aimed at keeping firefighters from getting killed or seriously injured.
- They are emphasized in training, reinforced in drills, briefed before assignments, debriefed after assignments.
- **Yet investigation reports consistently cite violations of the rules, apathy toward the guidelines, and/or forgetting the reminders as contributing factors when firefighters are killed or seriously injured.**
- The 10 Standard Firefighting Orders are your rules of engagement.





# Rules of Engagement - 10 Standard Firefighting Orders

- **FIRE BEHAVIOR**

- ✓ **1. Keep informed on fire weather conditions and forecasts** – Weather itself won't kill you, but the resulting fire behavior (or heat stress) might. Know what the weather is doing. Know what it's predicted to do during the current and upcoming operational periods. Apply the forecast to your situation, and anticipate how things may change. You should never be surprised by situational changes that could have been predicted. Continue to monitor weather changes throughout the fire.
- ✓ **2. Know what your fire is doing at all times** – Know where the fire is, what it's doing, and where it will go next. Plan for contingencies. What would you do, for example, if the fire spotted below you?
- ✓ **3. Base all actions on current and expected fire behavior** – This fits with Firefighting Order 1. Plan for what you expect to happen. Build in options, and consider worst-case scenarios.







# Rules of Engagement - 10 Standard Firefighting Orders

- SAFETY.

- ✓ 4. **Identify escape routes and safety zones, and make them known** – Decide on a safety zone and the route(s) needed to get there. Identify your “trigger points”– events or conditions at which you and your firefighters will disengage and move to safety. Make sure everyone on your crew knows the safety zone, escape route(s), and trigger points. If you don’t think you can comply with this Firefighting Order, you and your supervisor need to rethink the assignment.
- ✓ 5. **Post lookouts when there is possible danger** – Use lookouts not only to watch the fire but also to track the weather so you can get a jump on any changes. Posting a lookout is not a waste of a firefighter; it is one of the ways you keep yourself and your firefighters out of trouble.





# Rules of Engagement - 10 Standard Firefighting Orders

- **SAFETY.**

- ✓ **6. Be alert. Keep calm. Think clearly. Act decisively –**  
You can't lead effectively if you don't know what's happening around you, or if you are excited and unable to make sound decisions. It's even harder when you're in the middle of a blowup and responsible for the safety of others.

- **OPERATIONAL CONTROL.**

- ✓ **7. Maintain prompt communications with your firefighters, your supervisor, and adjoining forces –**  
Maintain two-way communications. Not only do you need to direct your firefighters, you also need to keep them informed of what's happening around you and you also need them to keep you informed. That way, if you're suddenly confronted with a critical situation, you and your crew can respond quickly, without wasting valuable time for explanations. Your supervisor and adjoining forces will also be better prepared to assist you.





# Rules of Engagement - 10 Standard Firefighting Orders

- **OPERATIONAL CONTROL.**

- ✓ **8. Give clear instructions, and be sure they are understood** – Too many firefighters have lost their lives due, in part, to not having clear instructions. Be sure you understand what your supervisors expect from you, and make sure you clearly communicate your expectations to your firefighters. Have your firefighters repeat those instructions back to you, and clarify anything that may have been misunderstood. Do not assume they know what you want them to do.
- ✓ **9. Maintain control of your forces at all times** – Know where your people are, and make sure they know where you are.





# Rules of Engagement - 10 Standard Firefighting Orders

- FIREFIGHTING.
  - ✓ **10. Fight fire aggressively, having provided for safety first** – This is probably the most misunderstood of the orders. The safest fire is one that has been extinguished. So the sooner you put it out, the better. If you're not aggressive enough, the fire will run you all over the mountain. However, don't be stupid and take unnecessary risks. If you have to back off a frontal attack because of intense fire behavior, work the flanks instead. This still qualifies as an aggressive attack, but it's a safer way of doing business.







# Situations that Shout “Watch Out!” (18 WATCH OUT SITUATIONS)

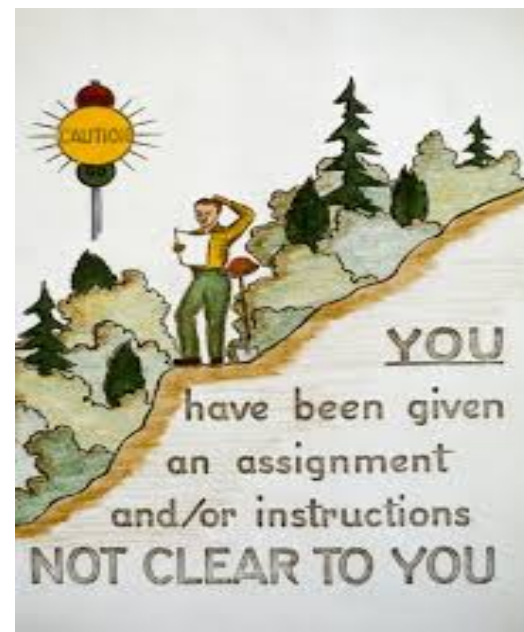
- The “**Watch Outs!**” are not orders, but the more of them that are present, the more consideration should be given to changing tactics. They are intended to teach the proper recognition of situations that are dangerous.
  - ✓ **1. Fire not scouted and sized up** – This is like fighting with a blindfold on or one hand tied behind your back. Because you do not know what is going on, you can’t know what to expect.
  - ✓ **2. In country not seen in daylight** – This is also like fighting blindfolded. You don’t know where the fire is relative to slopes, varying fuel types, natural barriers, etc. You can’t see where to put safety zones or escape routes.
  - ✓ **3. Safety zones and escape routes not identified** – Stop! Do not pass GO! Do not collect \$200! This is already a violation of Firefighting Order 4. Don’t do anything else until you establish safety zones and escape routes, and make them known to everybody





## Situations that Shout “Watch Out!” (18 WATCH OUT SITUATIONS)

- ✓ **4. Unfamiliar with weather and local factors influencing fire behavior** – Even in country that you have never seen before, many of the rules of fire behavior can be applied with a good deal of certainty. For example, the wind will blow upslope and up-canyon in the daytime, the fire will be hottest on southern slopes, and the relative humidity will be lowest in the mid-afternoon. However, there are exceptions to every rule.
- ✓ **5. Uninformed on strategy, tactics, and hazards** – Ignorance is never bliss on the fireground. Without information on fire weather, fire behavior, communications, and the overall plan





## Situations that Shout “Watch Out!” (18 WATCH OUT SITUATIONS)

- ✓ **6. Instructions or assignment not clear** – If the assignment isn’t clear or you haven’t been given clear instructions—or if you haven’t given clear instructions to your crew.
- ✓ **7. No communications link with your crew members or supervisor** – This situation is most likely to manifest itself when a radio fails or somebody does not follow the communications plan. It might also happen when you are assigned to work with crews from other agencies who have different radio systems.





## Situations that Shout “Watch Out!” (18 WATCH OUT SITUATIONS)

- ✓ **8. Constructing line without a safe anchor point** – Constructing line without a safe anchor point frequently happens during mobile attacks on fast-moving grass or grain fires. Engines keep showing up and squirting water on the flames, regardless of where they happen to be on the fireline and often without knowing how much fire is behind them (out of sight and out of mind). Any line established without a good anchor point is unlikely to hold.
- ✓ **9. Building fireline downhill with fire below** – Building fireline downhill with fire below you is inherently risky. The fire can easily flare up, make a fast uphill run, or outflank you before you can build the line down to it. Other factors that increase the risk include steep terrain, heavy fuel, and rotor wash from helicopters. Yet, in the real world, building fireline downhill is often the only choice when the fire is in the bottom and the sole access road or helispot is on top.







## Situations that Shout “Watch Out!” (18 WATCH OUT SITUATIONS)

- ✓ **10. Attempting frontal assault on the fire** – Attempting a frontal assault is almost never a good idea, regardless of how many fire engines or aircraft you have. It is an even worse idea when there are only five of you with hand tools. The problem is that you are letting the fire dictate when, where, and under what conditions you are going to fight it. And fires never fight fair. The heat, smoke, firebrands, and noise will be at their worst at the head of the fire. The head of the fire is likely to compromise your escape routes and safety zone.
- ✓ **11. Unburned fuel between you and the fire** – Having unburned fuel between you and the fire is common in an indirect attack. You can generally mitigate the risk by backing off an appropriate distance and burning out the line as soon as it is safe. But a greater danger sometimes gets overlooked ... fuel within the burned area that was not completely consumed and presents the threat of a re-burn. This is most likely in tall fuels, like timber, where the heat from below only kills and pre-dries the canopy. All it takes is something like a change in wind direction to start a hot re-burn that travels quickly, posing significant danger to crews on the ground who think they are safe because they are standing in “the black.” Large islands of unburned fuel within, but adjacent to, the fireline are a significant hazards that need to be mitigated.





## Situations that Shout “Watch Out!” (18 WATCH OUT SITUATIONS)

- ✓ **12. Cannot see the main fire; not in contact with someone who can** – This happens frequently on large fires, especially in steep terrain, where the plan calls for indirect attack. Your crew may be building fireline in the bottom of a canyon a long way (miles or ridges) in front of the main fire. The terrain or cover may block your vision, but you still need to know what the main fire is doing .
- ✓ **13. On a hillside where rolling materials can ignite fuel below** – Frequently, especially in direct attack, firefighters operate on hillsides with the fire above them and unburned fuel below them. If burning embers or rolling materials ignite that unburned fuel, firefighters may be in immediate danger.





## Situations that Shout “Watch Out!” (18 WATCH OUT SITUATIONS)

- ✓ **14. Weather is becoming hotter and drier** – Even in country or fuel types you may not be familiar with, when the weather starts getting hotter and drier, it is usually safe to assume that fire intensity will increase. How much it increases depends on the numbers: temperature, humidity, fuel moisture, and wind speed.
- ✓ **15. Wind increases and/or changes directions** – Changes in wind speed and direction can happen quickly, taking people by surprise and having a dramatic effect on fire behavior. Conditions most likely to cause these sudden changes include the collapse of a thunderstorm (downdrafts or microbursts), the passage of a cold front, the lifting of an inversion layer, the breakthrough of an inversion layer by a convection column, or the onset of a sea breeze.





## Situations that Shout “Watch Out!” (18 WATCH OUT SITUATIONS)

- ✓ **16. Getting frequent spot fires across the fireline –** Frequent is the operative word here. When you have multiple spot fires, the odds of finding and extinguishing all of them before they increase in intensity are against you. Under the right conditions, these multiple spot fires can cause area ignition, instantly making the entire area unsafe.
- ✓ **17. Terrain and fuels make escape to safety zones difficult –** Fire always goes uphill and over rough terrain faster than firefighters can run. Under certain circumstances, such as sundowner winds, the fire can move extremely fast down-slope, even at night. If the fuel and terrain make escape to safety zones difficult, your escape routes are inadequate.







## Situations that Shout “Watch Out!” (18 WATCH OUT SITUATIONS)

- ✓ **18. Taking a nap near the fireline** – Fighting wildland fires is often exhausting, enough so that you might easily violate Firefighting Order 6. If only you and your crew could sneak in a nap, it might improve your safety and productivity. How can you grab that nap without putting yourself at risk?
  - ✓ • Find a safe place, like a safety zone, the cab of the engine, the patio of the structure you are protecting, etc. The operative phrase in this watchout is “near the fireline.” If you’re a safe distance from the fireline, you can rest in peace.
  - ✓ • Post at least one lookout—two might be better—to keep an eye on the fire.
  - ✓ • Tell your supervisor where you are and what you are going to do.



# Safety in a Dangerous Profession



• QUESTIONS?



**ONE LESS  
SPARK  
ONE LESS WILDFIRE**

A graphic illustration of a wildfire spark, showing a bright yellow and orange flame rising from a dark, smoldering base.