

Airplanes are used to drop fire retardant at wildland fires. The material dropped is either a chemical compound mixed with water or water alone. Some of these aircraft are capable of delivering up to 3,000 gallons at one time. If you consider that 3,000 gallons, at over nine pounds a gallon, is coming down from around 200 feet above ground level at 130 miles per hour, the dangers become evident. The turbulence caused by the plane's passage can knock the tops out of trees and fan the fire. If you are in the area where a drop is to be made, it is best to clear the area prior to the drop. If this is not possible, lie on the ground on your stomach, facing the aircraft, and place your hands on top of your head. If you are hit by a retardant drop you will be covered by a sticky, slippery coating that has a strong ammonia odor. It is not really harmful, but it is uncomfortable. Be aware that it is slippery on dry grass and rocks and will make hand tools hard to hold on to. This material is slightly corrosive and should be washed off vehicles as soon as possible.²³

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Any discussion of safety in the emergency services has to include decision making. Decisions were involved in all the places and situations in which firefighters and other responders were killed or injured, including: during training, responding to incidents, while performing at incidents, and when returning from incidents. Without a review and understanding of how we make decisions, especially under stress, we are missing one of the key elements of keeping ourselves and those around us safe from harm. As has been stated, “All firefighters deserve a safe trip home.”

As a new firefighter it is going to require some tact on your part should you choose to approach your supervisor on these items. Not everyone has bought in to the more recently

CRM
by using

Look up, Look down, Look around

The second of the condensed safety messages, “look up, look down, look around” is as follows:⁶

LOOK UP before you start to work, and every so often while working, get your eyes off the ground and look up. See what the wind, smoke, and fire are doing. Is the fire moving toward you or away from you? Are there aircraft starting to work overhead, close enough to be a danger to you? Look uphill from your location. Is there heavy equipment operating further up the hill that may roll rocks or logs down on top of your position?

LOOK DOWN, watch your footing. At night it is easy to become blinded from the light of the fire and walk into holes or fall from drop offs. Logs and pipes in tall grass can easily trip you. When carrying a razor sharp Pulaski, this could be disastrous. Look downhill and be sure that the fire has not hooked around or been ignited by rolling material below your position. The moon can illuminate the area in which you are working quite well. The problem is that moonlight does not provide you with good depth perception. It is plenty light enough to see where you are going, but easy to walk right off into a ditch. **LOOK AROUND**, be aware of what is going on around you. You may be working too close to someone operating a chain saw or swinging a chopping tool. Be aware of what the fire is doing. Keep track of the escape routes and safety zones. Do not become separated from your crew.

These safety messages can be applied to every type of firefighting, not just wildland. Their main focus is that you keep informed on what is happening and remain aware of how you are going to seek safe refuge. Firefighters tend to fall victim to the “candle and moth” syndrome and are drawn in to seeing only the fire and nothing else. Do not become so intent on extinguishing the fire that you do not consider where it is going and what damage it has caused to trees and structures, either of which may fall on you if you are not careful.

NOTE The main focus of these safety messages is that you keep informed on what is happening and remain aware of how you are going to seek safe refuge.

WILDLAND URBAN INTERFACE/INTERMIX FIREFIGHTING

Wildland urban interface firefighting is becoming more common. More and more people have escaped the cities by building their homes in the foothills and mountainous areas. This has given rise to the situation where the firefighters cannot afford to just back off a couple of ridges, create a fire break, and wait for the fire to get there. Now firefighters must place themselves and their equipment in the path of the advancing fire (Figure 14-12). In this type of firefighting, the main objective is to protect as many structures as possible. This is primarily done by placing a pumper at each structure. It would seem that a pumper with a 1,000 gallon-a-minute pump and 500 gallons of water could take on most any fire.

FIGURE 14

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3. *Decision making.* Decision making must be based on information. This includes information from training, experience, and information gathered at the scene. The decision making is focused on risk/benefit analysis. We must look at what we are doing and decide whether it is worth it. No firefighter should die to save property, though every year some do. Too much information overloads the decision maker and too little leads to poor decision making. Somewhere in the middle is the right amount of information selectively focused on the right elements of the scene to make sound decisions. We must also recognize that there are some things we know, some things that we do not know, and some things that we do not know that we do not know. This is where experience enters the equation. A person with quality experience can focus on the important elements, pay less attention to the less important elements, and not forget that there are factors in a dynamic situation that may not be readily perceived. This reinforces the need to maintain situational awareness.
4. *Teamwork.* Teamwork is critical. Every member of the team must know their job and know where they fit in the organization. This could be a company level organization or a major operation with hundreds of personnel. This refers back to the incident command concepts of *Unity of Command* and *Chain of Command*. Failure to perform as a team at emergency incidents can lead to a reduction in operational effectiveness, excessive property loss, injury, and death.
5. *Barriers.* Barriers can affect any or all of the previous factors. Rather than go into it in this section (CRM), it will be further explained in the next section on "The 2&7 Tool."

The 2&7 Tool

Brad Mayhew, author of "F L C E S Δ," is conducting ongoing research into how firefighters make decisions. His **2&7 Tool** illustrates two errors and seven barriers common to poor decision making. Though he is from a wildland fire background his tool can be applied to other types of emergency situations as well.²⁶

The two errors:

1. Underestimating hazards and using inadequate safety measures.
2. Failing to notice changing conditions and adjust tactics accordingly.

If you were to apply these two errors to any number of case studies of firefighter near-misses and fatalities in all risk situations, you could see that they often apply. Firefighters commit too deeply to the situation and overextend their ability to escape. Even a rapid intervention team (RIT/RIC) cannot get you out if you are in too far or the situation deteriorates to the point that they cannot locate you or get to you. Driving too fast on the way to the incident is an example of error number 1, because you are unable to stop

The 2 & 7 Tool The 2 errors and 7 barriers common to poor decision making.

quickly enough, or avoid the hazard, because of your excessive speed. Another example is *placing only one or two ladders to the roof for one engine or truck company. As the incident progresses and they are joined by other firefighters, there are too many on the roof to make a quick escape down the number of ladders available should conditions deteriorate and it becomes necessary for them to do so.* In a wildland fire the example would be getting too far from the safety zone, creating too long an escape time, and then the fire flares up, cutting off your escape. Or, as in the ladder example, more personnel are assigned to the division than can safely fit in the safety zone. This sort of thing just seems to creep up on firefighters because they are often overly-focused on getting the job done and not on what else is happening (lack of situational awareness).

The seven barriers:

1. *Inexperience.* As previously noted, experience is valuable. That is if it is quality experience in performing safely, not learning cowboy tactics and thinking they are OK just because you got away with it before.
2. *Getting too comfortable.* Thinking nothing bad will happen. Or as in Barrier 1, nothing bad has happened yet, so what is the likelihood that it will this time? State legislatures would not have to pass laws against talking and texting on cell phones while driving—if people were attentive and not overly comfortable with doing it, and thinking nothing bad will happen while texting when they are supposed to be focused on their driving.
3. *Distraction from primary duty.* You can only focus fully on one thing at a time. Outside factors at the incident scene can divert your attention from what you should be focusing on. A part of the structure collapsing down the street diverts your attention and the piece you are working under comes down on top of you. The driver operator's primary duty is to get you there safely, yet we still suffer from fatal responding vehicle rollovers due to excessive speed and other accidents.
4. *Priorities out of order.* The first priority in any incident is life safety, including your own. Firefighters have been killed trying to perform "rescues" that were obviously body recoveries. Some fight fires for the thrill, danger, and adrenaline rush. These are the ones that will get you hurt or killed.
5. *Social influences.* One of the strongest of these is peer pressure. In the fire service it is common that new firefighters have to "prove themselves." This occurs at the station and on the fire ground. This does not mean that we should all get into the mode of "group think" where we stop thinking for ourselves or overextend just to prove something to others.
6. *Stress reaction.* As stress builds, the rational thinking part of the brain tends to shut down. We focus on a plan of action and stick with it. This is the "do or die" mindset and leads to tunnel vision, which reduces situational awareness. This becomes evident when the interior attack crew is ordered out of the building by the Incident Commander because the roof is about to fall in and they reply, "We almost got it,

Chief, just a few more minutes." They are not in position to see the big picture and need to do as ordered and not argue.

7. *Physical impairment.* Physical impairment can come in many forms; carbon monoxide poisoning, lack of sleep, drinking alcohol the night before coming on duty, drugs, and too many incidents in too short a time. These all lead to a general diminishment in awareness and decision-making ability.

We must all guard ourselves and those around us from making the two errors and falling victim to the seven barriers if we are to be safe and effective firefighters. This applies to every incident, every time, no matter how simple or commonplace.

SUMMARY

This chapter presented a number of the operations engaged in by firefighters. It by no means covers every situation or type of event. Numerous safety rules were presented that can be applied in a wide range of situations. There are complete training programs available for different incident types. The main point you should be left with is that every situation has its own set of hazards and it is your responsibility to make sure that you provide for your personal safety and the safety of others. The worst hazard

is often the one that is not recognized. You must train yourself to evaluate situations as they arise and anticipate situations that can harm you. Hazards and the risks that firefighters take in relation to them are based on decision making. Decision-making skills are critical in maintaining firefighter safety. This requires you to remain constantly vigilant at every type of incident. When you become complacent and stop paying attention, or think that things are only routine, you just may be in the greatest danger. Never lose your situational awareness as the consequences can be deadly.

REVIEW QUESTIONS

1. List at least three interior hazards encountered at structure fires.
2. List at least three exterior hazards encountered at structure fires.
3. What is wrong with freelancing at emergency scenes?
4. Why should the IC set up a RIT at the scene?
5. Why should you not enter electrical substations without electrical company personnel?
6. Using your text, list the 10 Standard Firefighting Orders.
7. Using your text, list the 18 Situations That Shout Watch Out.
8. What are the four components of LCES?
9. When implementing LCES, why does it need to be constantly reevaluated as the incident progresses?

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