A Double Edged Sword

The term "a double-edged sword" literally comes from using a blade that is sharp on both sides. It means that the blade can cut both ways. It is often used as an idiom for situations in which a decision has both positive and negative aspects. In other words it can be either good or bad.

We have a lot of double-edged sword scenarios in the fire service. Let me use one morale booster as an example. We all know that burning down a major business in our community is a terrific economic loss in many cases, yet why is it that morale in a fire station is often the highest after you've had a working fire? Another example might be related to a main topic in this magazine and that is sprinkler systems. For example, putting a sprinkler system in may reduce fires. But, by reducing fires it may take away the justification of why you need a fire department in the first place. At least that is what some will say.

What got me in the mood of talking about this topic was a recent conversation about the "greening" element of modern building construction. In order to make buildings more energy-efficient we may have to seal them up tighter and tighter. Unfortunately, we now fill the buildings up with a combination of plastic and synthetic materials that produce toxic byproducts that make it even more dangerous to fight a fire inside the building. In other words, if we want to be environmentally correct to limit the use of energy, we have to accept some new risks associated with fire behavior having new consequences.

The idea of the "greening" of buildings got me to thinking about another double-edged sword. That is the discussion of when and where sprinkler systems can make a difference as a return on investment. We all recognize that if a fire occurs in a building it is going to destroy that building unless a sufficient amount of water is applied to the burning material in order reduce heat to a tolerance level where the fire goes out. Maintaining that level of service is expensive. Here's where the double-edged sword begins to take shape.

What method do we use to calculate the amount of water that may be required to stop a major fire in a large building? That's a simple question: fire flow. We have the ability to calculate approximately how many gallons per minute could be required for fire suppression efforts depending upon construction type, contents, size and other factors. Regardless of which formula you use it usually ends up as thousands of gallons of water per minute. An acronym that is often used to define this is NFF- needed fire flow. Of course the obvious extension of needed fire flow is to extrapolate that over a period of time that may be required to gain control over a major fire. Sometimes its hours. In my career, I have been on a few fires during which we applied fire flow over a period of days.

What is often missing in the observation of this phenomenon is that a sprinkler system could have stopped that fire with the amount of water that might fill up a 55 gallon drum at the most. That's the

double-edged sword. Can we continue to allow large buildings to be constructed that are energy-efficient and simultaneously place a burden of fire flow on the community that results in thousands, if not tens of thousands of gallons of water to be used for fire suppression?

We're not what got me thinking about this was not a fire – it was observing a reservoir. Not everyone in this country is suffering a drought, but we in California are. I had the opportunity to visit several of our reservoirs recently and was appalled by their low levels. Individuals are now being asked not to wash their cars. They are being asked not to water their lawn. Yet, if a fire occurs in a large building, there is no way that you can prevent the unnecessary and totally wasteful use of water that will emerge from the fire-fight.

Earlier this column I admitted to a cultural aspect of the fire service by talking about the fact that a large fire is often a morale booster. I know I've been to several "water carnivals" during which we have discharged so much water that actually disturbed the water distribution system. I have taken photographs of such events, and not untypical as a fire service instructor I have used them in my classes to discuss tactics and strategy.

But, as I was driving by large state reservoir recently and thinking about how we cannot be wasteful and with our water supplies I had a twinge of regret that I too had enjoyed the experience at the expense of others.

I raise this issue more as a critical thinking point than the technical aspects of fire sprinklers themselves. In other words I doubt that anybody is ever going to agree that a drought is a really good reason for sprinklers. The argument will always be made that droughts or temporary and they come and go. Nonetheless, thinking of the environment overall and comparing the waste of public resources that occurs in firefighting we could make the argument that fire sprinklers are among the "greenest" of all our fire suppression technologies.

Then, there is the added value to this discussion of reducing the flow of potentially contaminated water back on our surface streets and into our waterways. If you have a lot of experience in fighting large structural fires you may be able to relate to the idea that sometimes the water running out of the doors of buildings that are fully involved looks like a toxic soup instead of a benign spring or creek. The scientists have a term for it. It is called anthropogenic. It means environmental pollution that originates in human activity. The debate about our impact on the environment goes way beyond anything we discuss about firefighting, but the term anthropogenic may someday soon become part of our vocabulary. Remember when hazardous material incident was called the "wash-down?" How long do you think we can go on before a department is sued for pollution from a fire discharge?

The Double-edged sword that we have to think about today is how to make sure that our risk mitigation

practices have an element of accountability towards protecting our environment. On a different level of this discussion we are currently debating about the use of fire retardants – another double-edged sword.

In the context of installing sprinkler systems and in all the arguments associated with them I've never heard much debate about our protecting the environment by using sprinklers. However, I think I can make the argument that using a sprinkler on a fire with only the amount of water the could be mopped up by an engine crew in 15 or 20 minutes, versus standing on the outside of buildings dumping hundreds of thousands of gallons into it, creating a river of pollutants into our water supplies that are getting more and more difficult to sustain it makes a lot of sense.

I wonder if Al Gore would even agree.