IMPORTANCE OF EARLY RESPONSE

DESCRIPTION & IMPACT OF THE FLASHOVER PHENOMENON & MEDICAL EMERGENCIES

(From "FIRE SERVICE DEPLOYMENT: Assessing Community Vulnerability", 2011 Urban Fire Forum, NFPA)

On Scene Risk Escalation

During the growth stages of a fire, flashover is a significant event. Preventing this stage of fire behavior is a factor in establishing fire department resource needs. When flashover occurs, in that instant, everything in the room breaks into open flame. This eruption of flame generates a tremendous amount of heat, smoke and pressure with enough force to push the fire through doors and windows and beyond the room of origin. Flashover is a significant stage of fire growth for several reasons. First, the likelihood of survival and the chance of saving any occupants trapped in the room of origin drops dramatically. Second, flashover creates an exponential increase in the rate of combustion as well as the risk to the health and safety of firefighters. Third, a considerably greater amount of water is needed to extinguish the burning material. Fourth, a greater number of firefighters are required to handle the fire spread to different locations in the structure and the larger hose streams now necessary to extinguish the fire. Finally, science shows that a post flashover fire burns hotter and grows faster as time progresses thus compounding the search and rescue task in the remainder of the structure again requiring a greater number of firefighters to mitigate the incident.

The dynamics of fire growth and the associated potential for risk escalation dictate various configurations of fire station locations and firefighter staffing patterns. Understanding fire behavior, particularly flashover, is key to designing an emergency response system so that a sufficient number of firefighters and equipment are strategically located throughout the community to assure that the minimum acceptable response force can be assembled to engage in a fire before flashover (or substantial risk escalation) occurs. Therefore, to save lives and limit property damage, firefighters must arrive at the right time, with adequate resources to do the job.

In emergency medical response, there is a similar perspective. The same need to intervene early to stop the progression or escalation of a risk event can be noted in firefighter/EMT and Paramedic response to cardiac or traumatic emergencies. For example in a heart attack that progresses to a cardiac arrest where a victim becomes pulseless and stops breathing, there is a six minute window of opportunity to intervene. Without intervention from bystanders or first responders arriving in a timely manner, irreversible brain damage will ensue. The same is true for badly injured victims of trauma where blood loss is significant, without appropriate intervention, the emergency continues to escalate to a point of irreparable damage.