

Flashover



*It was the worst loss of emergency personnel since the 9/11 terrorist attacks, and it was caused by a **flashover**.*

In what seemed like seconds, nine firefighters tragically lost their lives in a warehouse fire in Charleston, South Carolina, where they entered the building in an attempt to rescue trapped employees.

These nine men, who had a combined 131 years of experience, died doing what firefighters do across the country on a daily basis: risking their lives to save those in danger.

Flashover: Facts and Details

What is a Flashover?

The non-technical definition is simply when a room bursts into flames.

However, according to the National Fire Protection Association, a flashover is a stage in the development of a contained fire in which all exposed surfaces reach ignition temperature more or less simultaneously, and fire spreads throughout the space.

Flashover signals several major changes in fire development:

- It is the end of the growth stage of the fire. It is now a fully-involved fire
- It is the end of an effective search and rescue in a room
- It signals the beginning of the danger of collapse
- It means almost certain death to anyone trapped in the blazing room – civilian or firefighter

How to delay flashovers and possibly gain a few valuable minutes:

- Ventilation: Venting the room will release the heat in the room
- Opt not to ventilate: Starving the fire of oxygen will slow down the combustion rate
- Discharge a portable extinguisher: Cooling down the temperature in the room will delay a flashover

Warning Signs of Flashover

- Heat mixed with smoke: Heat is the trigger. When firefighters must crouch down on hands and knees to enter a room, they must consider this a sign of possible flashover
- Rollover: Sporadic flashes of flame mixed with smoke at the ceiling level are caused by heated combustible gases in the smoke which ignite into flashes of flame when mixed with the oxygen in the air. Rollover precedes flashover
- Large amounts of white smoke can also be an indicator of an impending flashover. Several documented fires - reported to have contained large quantities of white smoke just before flashovers – were responsible for a number of firefighters being killed

Point of No Return

The point of no return is the distance inside a room where a searching firefighter can be and still escape a flashover. This distance is five (5) feet inside a room. Temperatures in flashover conditions can exceed 1000 degrees.

Firefighters have just seconds to escape. Exposed areas may reach temperatures in excess of 1000 degrees.

Cairns® Helmets Put to the Test: Exclusive Thermal Impact Cap Shell Release System Makes the Difference

Louisiana: George Frost, a firefighter with St. Tammany Parish Fire District 13 in Louisiana for four years, unintentionally put his Cairns 1044 helmet to the test – from the extremes of flashover conditions to being run over by a firetruck.

“It’s supposed to be made to last,” Frost joked. “I like to put it to the test.”

Frost and his fellow firefighters were in a training container using burning fuel. The training situation quickly raged out of control, and extreme heat had the container glowing red.

The firefighters evacuated, and soon Frost realized his bunker gear was charred and melted and the Borques on his Cairns 1044 helmet were melted along with the stickers on the helmet and the band holding his flashlight. However, his helmet was intact.

Luckily, the thermal impact cap took the brunt of the extreme heat, and Frost did not suffer any burns on his head.

Connecticut: Firefighter Chris Pepler and Lt. Kevin Hayes were among the Torrington Firefighters responding to a three-story, three-family house fire. As they attempted to climb to the third floor to search for trapped victims, the rooms were glowing bright orange and intense heat pushed them back.

As the carpet melted beneath their feet, Pepler and Hayes recognized the warning signs of flashover and quickly escaped. Luckily, both survived the incident without injury and there were no victims in the fire.

Pepler credits his Cairns Houston N6A® traditional leather helmet with the standard thermal impact cap for saving him from any burns to his head.

More than 50 firefighters between 1990 and 2000 have been killed by the rapid progression of fire. Flashovers are the most dangerous time in a fire. Firefighters must know the warning signs to avoid being trapped or, worse, killed, and they must have the best PPE available to protect them the way they protect us.



Since 1836, Cairns has provided superior quality fire helmets to millions of firefighters. For more information, contact MSAFire at 1-877-MSA-FIRE, or visit the website at www.msafire.com.

Sources:

Essentials of Firefighting and Emergency Response, Second Edition
www.nfpa.org
www.firetactics.com
www.workingfire.net

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Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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