



House Fire – Buffalo, New York



Photo by John Cetrino

The above picture was on the front cover of Firehouse magazine's March 2004 edition. It is a telling image of the different fire conditions that can be found simultaneously within a single structure. The challenge for all firefighters is to 'read' each situation and then employ the correct tactic and technique.

Let's look at each condition in turn and discuss how they need to be managed to ensure our safety and efficient extinguishment.



Ground Floor - Not yet involved

This is their entry point; it is clear of fire and smoke. The priority here would be to protect the stairwell with gas cooling hoselines via a dedicated hoseline crew. The stairwell must be maintained as a safe escape route for crews working on the upper levels.



2nd Floor – Pre Flashover Conditions

This room shows hot fire gases banking down from the ceiling. It appears that these gases have come from the adjoining room prior to it reaching Flashover (see below). Within this room all combustibles exposed to these hot gases would be pyrolysing and adding to the flammable atmosphere. This room could be moments from Flashover with the adjoining room providing heat, fire gases and an ignition source.

This is an extremely dangerous situation for internal crews about to launch an attack on the fully developed room adjoining. Crews **MUST** make this room safe with aggressive gas cooling techniques prior to attacking the fire in the adjoining room. Failure of the room's windows at this stage (either by accident or design) could bring about Flashover with the advent of more oxygen and a 'leaning' out of the flammable mixture inside.

2nd Floor – Fully Involved Room

This room has 'flashed over' and is now fully developed. The open windows are providing ventilation for the fire to continue in this state. There is relatively little smoke issuing and the fire is burning at its most intense.

No person can survive in this area and the most efficient extinguishing technique would be an 'indirect' attack launched from the interior doorway.



Attic – Under Ventilated Room

This room is receiving large volumes of heated fire gases from below. The lack of visible flame and the billowing smoke escaping from the attic window under pressure, is clear evidence of an under-ventilated compartment.

A danger exists if these fire gases are able to mix with oxygen and achieve a flammable state. At present they are probably too rich to ignite. If this pressure eased off and more air is able to mix with these gases, a flammable state could then exist. It may or may not need an ignition source to ignite.

Crews will need to stop the production of these fire gases (extinguish the fire below) and then cool and dilute the gases in this compartment before entry; always aware of any ignition sources that may be present.



CFBT KNOWLEDGE BASE

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There is an assumption amongst some firefighters that if we arrive when the building is showing signs of a fully developed fire, we no longer need to worry about Flashover, Backdraught or Fire Gas Ignitions. As we can see with this fire, that is a very dangerous assumption.

We must recognise that adjoining rooms will, if conditions of fuel and ventilation allow, Flashover in turn as the fire advances through the structure. Similarly, hot fire gases can collect within the structure awaiting the addition of air or ignition source, posing the danger of a Backdraught or Fire Gas Ignition. To remain safe in such a structure, firefighters must rely on all of their fire behaviour knowledge and 'gas cooling' techniques.

