

RESIDENTIAL FIRE SPRINKLERS — THE “MISSING LINK” IN ENVIRONMENTALLY RESPONSIBLE CONSTRUCTION

Residential fires occur daily in the State of Washington (7, 141 residential fires per year in 2008). They pollute our atmosphere with tons of hydrogen cyanide, sulfur dioxide, carbon dioxide, carbon monoxide, hydrogen chloride and nitrogen oxide. They fill our landfills with millions of tons of un-recyclable trash annually. They pollute our streams, rivers, and lakes with contaminated run-off water. In the United States they account for 16,000 injuries and kill almost 3500 people a year. Residential fires waste billions of potable water annually. In the built environment, the best way to eliminate environmental damage from these unwanted fires is to extinguish them when they are small, which is exactly what residential fire sprinkler technology does.

A “Carbon Footprint” is generally defined as “The sum of all emissions of carbon dioxide which were induced by human activity within a given time frame.”

Residential fire sprinkler systems reduce our “carbon footprint” in the following ways:

- They reduce the carbon dioxide production from residential fires by more than 80% by early suppression.
- They reduce the carbon footprint of operating fire suppression vehicles.
- They reduce the carbon footprint associated with rebuilding a burned home.
- They reduce the carbon footprint associated with caring for injuries and deaths associated with residential fires.
- They reduce the carbon footprint associated with relocating displaced occupants of a residential fire.

Landfills are another concern resulting from an uncontrolled house fire. Whether a house is completely destroyed in a fire or is only damaged, tons of building materials, furnishings and other ruined possessions are hauled to the dump. According to a green building guidelines report created by the Alameda County Waste Management Authority (San Leandro, Calif.), it's estimated that 21 percent of materials disposed in county landfills are construction and demolition debris. Rebuilding a home will not only require new building materials but also generates tons of construction waste. The report states that total construction waste generated from one 2,000-square-foot new home is nearly 13 tons.

The mission statement of the United States Green Building Council is “To transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy and prosperous environment that improves the quality of life.”

Residential fire sprinklers directly affect several areas measured in green construction including:

- Locations — increased housing density is often allowed by AHJ's for residential sprinklers
- Sustainable sites — fire sprinklers historically increase the life of a building.
- Energy and atmosphere — reduction of toxic airborne emissions from residential fires; reduction of the carbon footprint of unwanted fires.

- Water efficiency — residential fire sprinklers allow reduced required fire flow and consequently smaller water mains. Many AHJ's allow greater hydrant spacing with sprinklered residences. Fire sprinklers react quickly and utilize minimal water. A residential fire sprinkler contains or extinguishes a fire 90% of the time with just one head flowing at 13 gpm for 10 minutes or less, compared with two or three suppression firefighting hoses each flowing a total of more than 250 gpm's for possibly hours. Contaminated run-off from fire-ground efforts to control fires in unsprinklered residences pollutes our streams and lakes.

Next month, the nonprofit Home Fire Sprinkler Coalition (HFSC) is partnering with FM Global, one of the world's largest commercial property insurers, on an unprecedented research project to identify, analyze and evaluate the environmental impact caused by home fires — a topic of increasing international importance.

We know sprinklers provide environmental benefits — benefits we will only be able to prove through scientific study. When sprinklers activate they control the heat, flames and smoke of a home fire, effectively mitigating the products of combustion. The expectation is that a reduction in combustion also results in lessened pollution. It is time to formally determine those qualities as well as the potential for reduced water-related impact. There's never been a better time to do a study like this, because interest is at an all-time high. The results of the research will establish:

- The types, quantity and duration of air and water pollutants released from a home fire as well as the water usage from fire sprinklers and firefighters' hoses.
- The environmental impact resulting from burning household furnishings and finish materials as well as disposing the fire-damaged contents of a home.
- The carbon footprint associated with rebuilding a burnt home.

Residential fire sprinklers are an engineered system to insure a buildings' sustainability, independent of the contents, construction, or actions of its occupants. Residential fire sprinkler systems don't just protect our loved ones; they protect our environment.

It is time to acknowledge the inherent environmentally friendly nature of residential fire sprinklers. The most environmentally responsible thing we can do is to put the fire out while it is still small, with residential fire sprinkler systems.

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