

Building and Fire Research Laboratory



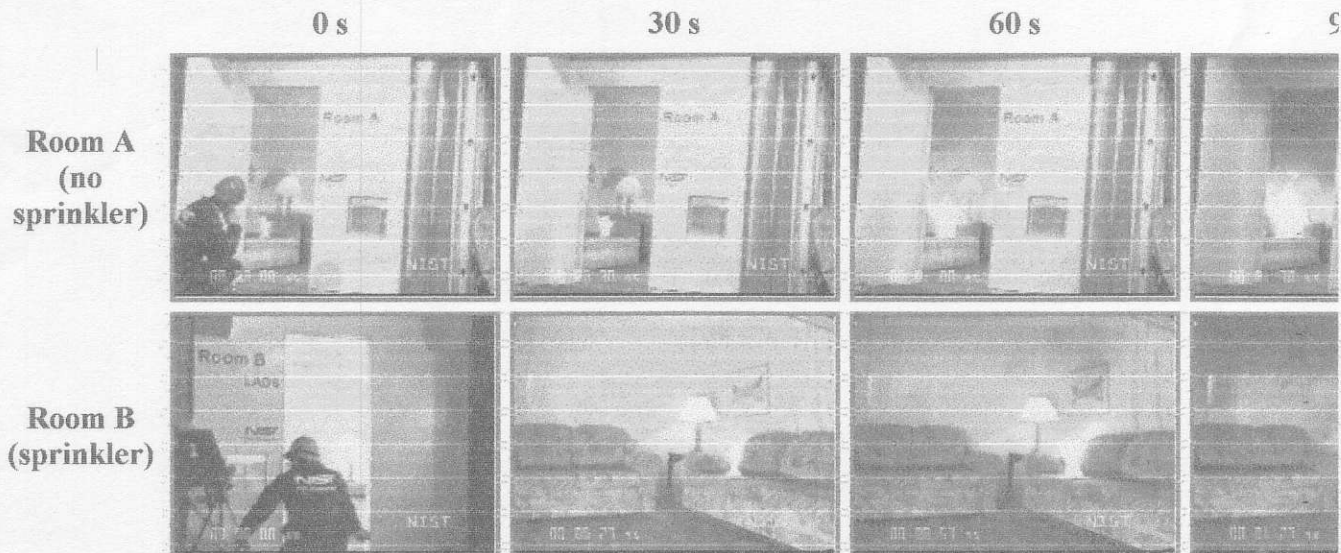
Residential Fire Sprinklers

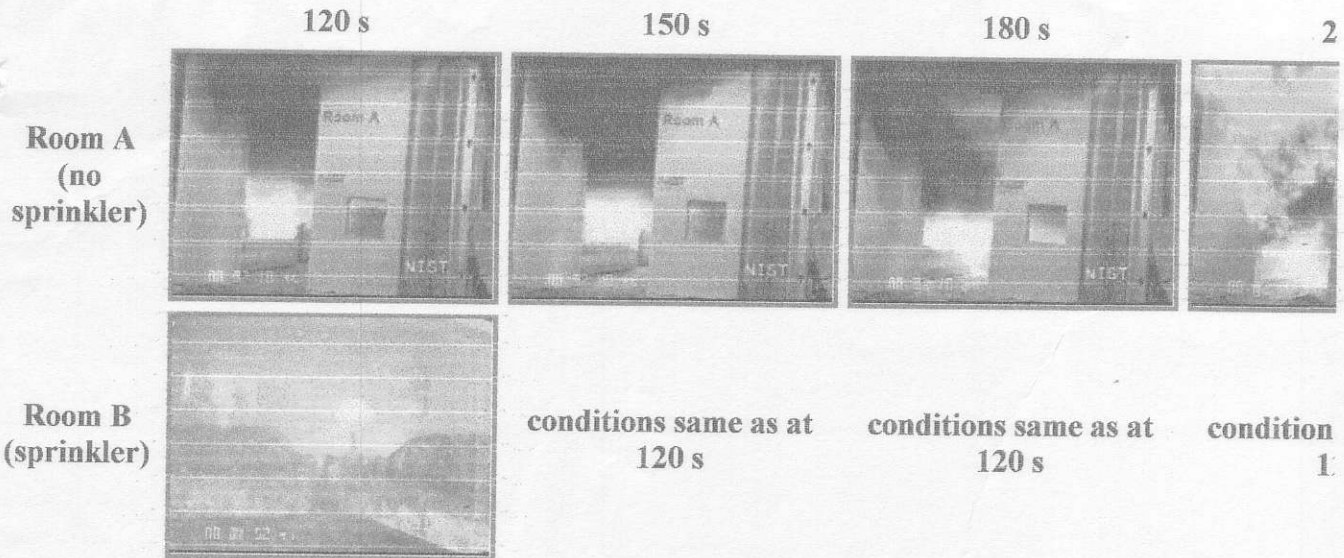
In 1996, more than 3,000 people in the United States died due to fires in their homes. Residential fire sprinkler systems have proven themselves to be effective life safety systems. BFRL, with support from the U. S. Fire Administration, conducted experiments to quantify the effectiveness of residential sprinkler systems designed in accordance with NFPA 13D.

An example of these experiments is the following comparison of a "living room" fire, with and without residential sprinklers. Two rooms, each 3.7m (12 ft) X 2.4m (8 ft) high, were built in the Large Fire Research Facility at NIST. Both of the "living rooms" were furnished with a sofa, love seat, end table, lamp and carpeting. Room A had a smoke detector installed and Room B had both a smoke detector and a residential sprinkler system. A match was used to ignite the sofa. Within 40 seconds after ignition, the smoke detectors in each room activated. The fires in both rooms continued to grow. At 85 seconds the residential sprinkler activated in Room B.

As a result of the water spray from the sprinkler in Room B, the fire is suppressed and safe conditions are maintained. The fire in Room A continues to grow. Flash over occurs in Room A, 195 seconds after ignition, with temperatures exceeding 600 °C (1100 °F).

Times are in seconds from ignition. Select a picture to view a larger version.





Animations

View a movie of this fire by downloading one of the following quicktime or mpeg files.

case	quicktime	mpeg
fire with sprinkler	sprink.mov (1.2 mb)	sprink.mpg (820 kb)
fire without sprinkler	nosprink.mov (1.2 mb)	nosprink.mpg (930 kb)

Using a 28.8 kb modem, it takes about one minute to download each animation for every 120 kbytes in size.

Comments

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