

Fire Research & Investigation Unit

Heads Up



BACKGROUND

Three separate fires have demonstrated the effectiveness of smoke alarms and sprinkler systems in differing circumstances.

INCIDENT DETAILS

Example 1: House fire – Domestic smoke alarms saved six people.

Background: In the early hours of the morning a smoke alarm activation alerted a family of six to a rapidly spreading fire in their rental home. Smoke alarms had been installed in the house by the property manager. An alarm positioned in the hallway activated around 4.30am which the fire investigator noted gave this family the critical few seconds required to wake and safely exit the home. While the house was destroyed, all members of the family were saved.



Photo above shows house destroyed.
All occupants escaped safely.

Example 2: Accommodation Hostel – Sprinkler system activates, controls fire.

Background: A four level building was being used as a city hostel. The building had smoke detection and a sprinkler system fitted throughout. Heat from a fire that started on a bed reached the ceiling and activated a sprinkler head that was in the room. The fire was contained to the bed resulting in minimal flame damage to the rest of the room. Prior to the sprinkler activating, smoke had filled the room and had begun spreading along the hallway to adjoining rooms due to a door that was jammed open.



Photo above shows hostel apartment with small fire suppressed by a sprinkler activation.

Example 3: Multi story apartment building – successful smoke alarm activation but no sprinkler activation

Background: A small fire occurred in a hot water heater unit in an upper floor of a city high-rise apartment building. The fire melted the outer casing of the heater and produced enough smoke to fill the open plan. Firefighters reported that smoke was at floor level when they arrived. The building was fitted with smoke detection and a sprinkler system however the sprinkler did not operate due to the low levels of heat being emitted from the water heater. A smoke detector in the apartment situated approximately eight metres from the water heater activated providing early warning to building occupants enabling their safe evacuation and transmitted an alarm to the fire service attracting their response.



Photos above show the water heater unit with limited heat damage to the surrounding area.

LESSONS LEARNED/RECOMMENDATIONS

- Smoke detectors and their alarm systems provide early warning to building occupants to enable safe and effective escape. Smoke detectors on their own do not suppress fire in any way.
- Sprinkler systems are usually effective in preventing development of fire (and at times can fully extinguish the fire) thereby reducing property loss and business interruption and enhancing occupant escape times.
- The above examples show that that both systems have immense value, but sprinklers on their own are not sufficient as life-safety devices as life-threatening smoke production can occur well before a sprinkler system operates or even without it operating at all.

INFORMATION SOURCES

- F2111587 House fire – successful smoke alarm activation
- F2138063 Hostel with successful sprinkler activation
- F2172886 High-rise with successful smoke alarm activation