

NSW FIRE BRIGADES



Modern house fires are changing: What does this mean for fire services.

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The research problem, what we think is happening



- Residential fires have a higher heat release rate than previously and can lead to quicker flashover than before due to various factors

Objective of the research



To identify changes in the domestic environment over the last three decades that may affect life safety outcomes for residents and firefighters exposed to residential fires.

Methodology

Stage One

- Commence Joint project with CSIRO
- Survey of firefighters
- Literature review

Stage Two

- Definition of typical fire loads and types of the 1970's and now.
- Conduct four room burns to map fire initiation and growth.
- Measure heat release rates

Overview of experimental set up



The 'new' bedroom



The 'new' lounge room



The 'Old' style Bedroom



The 'Old' style lounge room



Results

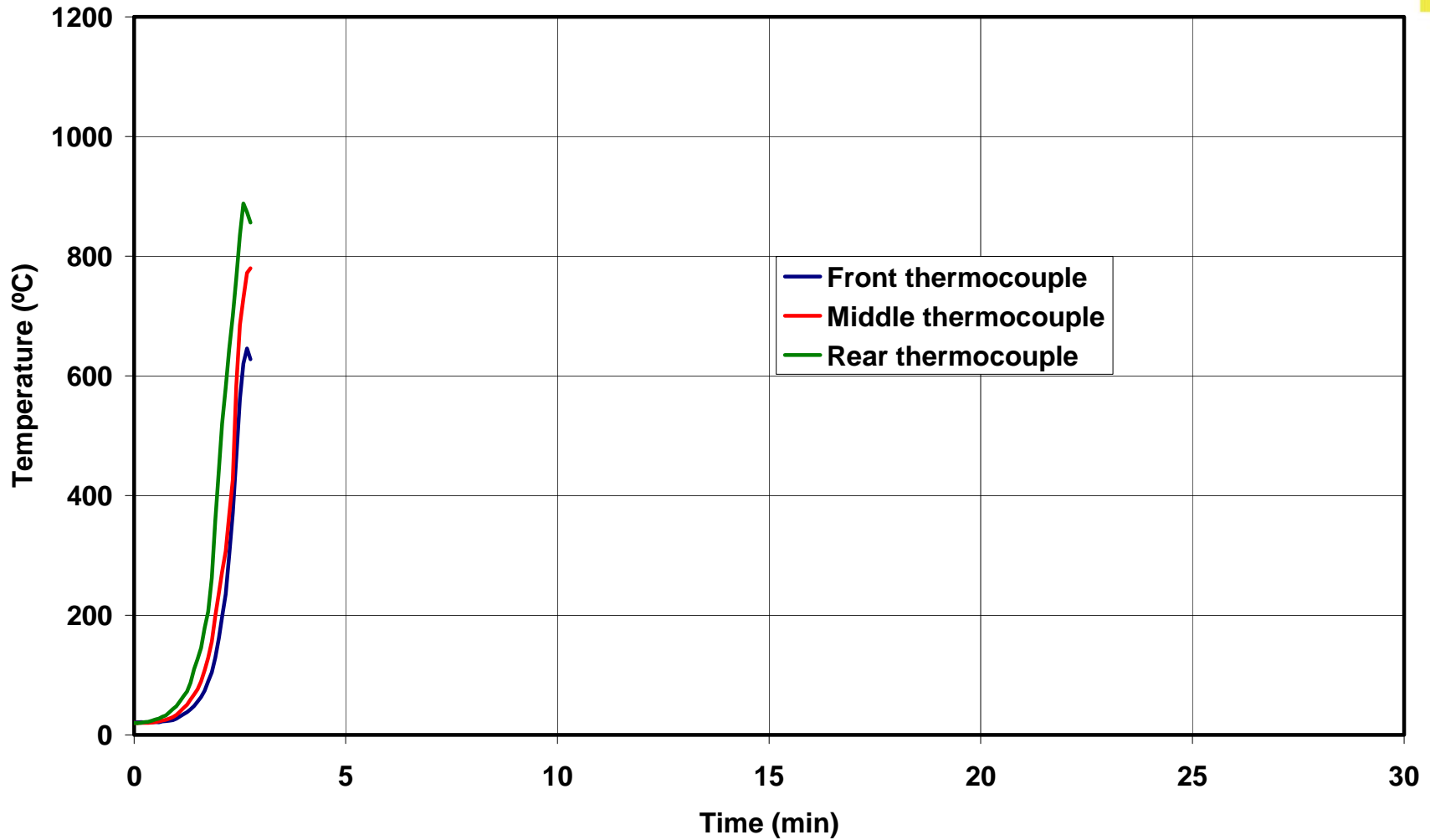
Stage One

- Literature Review
- Statistical Analysis
- Firefighter Survey

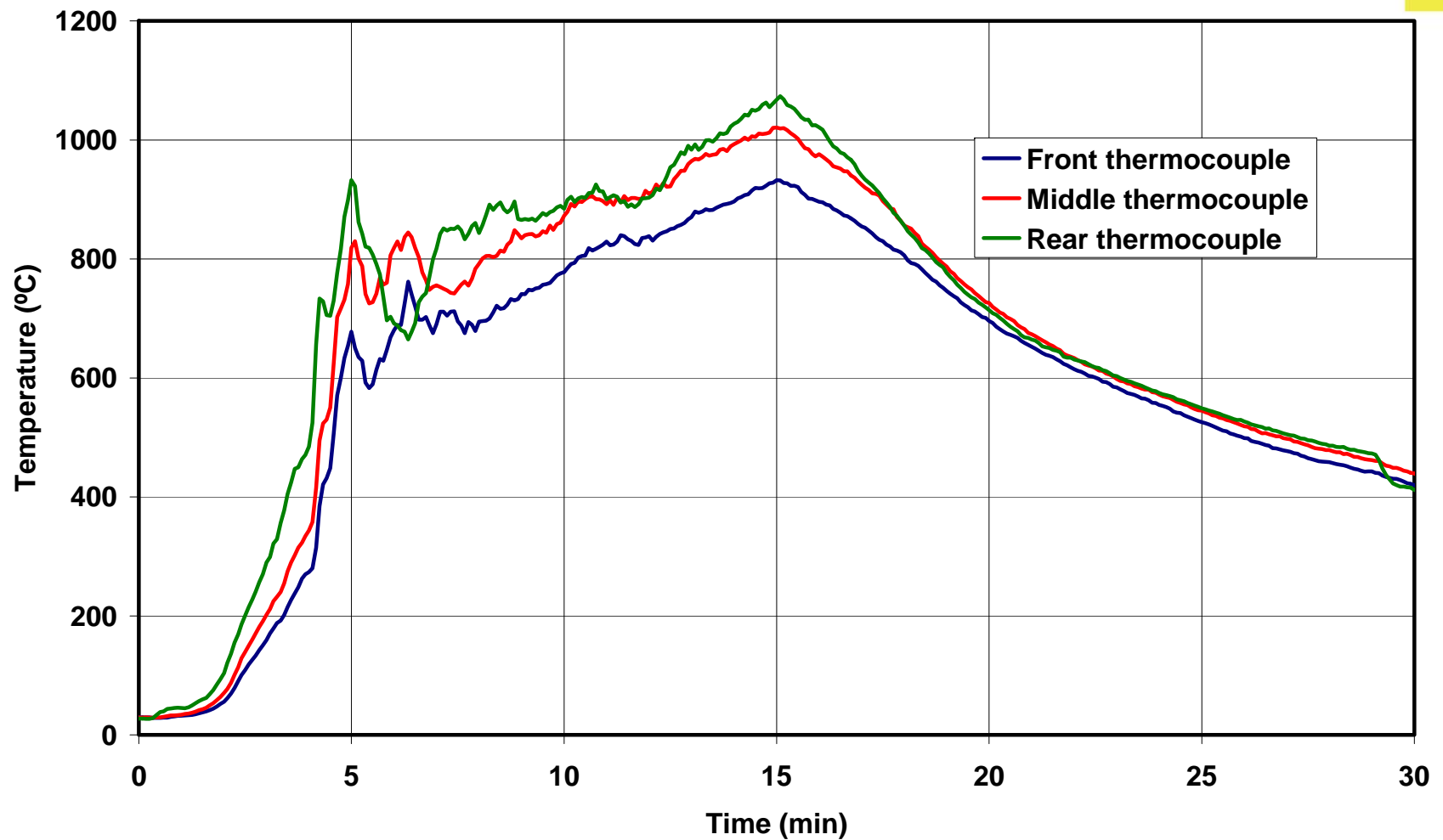
Stage Two

- Older style rooms, one took 17 minutes to flashover. The second did not flashover.
- Newer style rooms, flashover occurred in 2-3 minutes.
- In the flashover fire that was allowed to continue the fire grew to 2.5 MW and stayed at that level for 15 minutes.

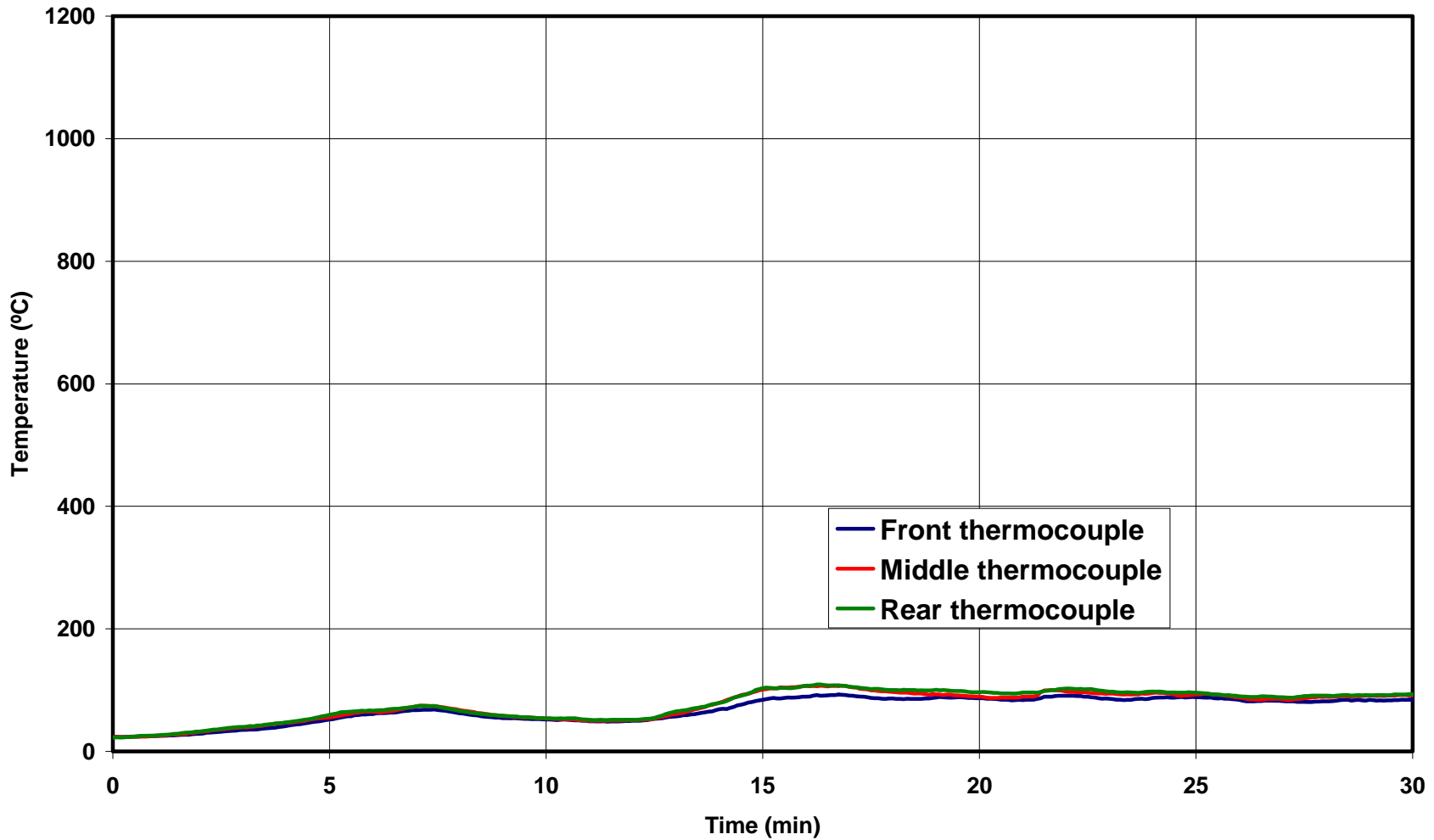
New style contents In bedroom



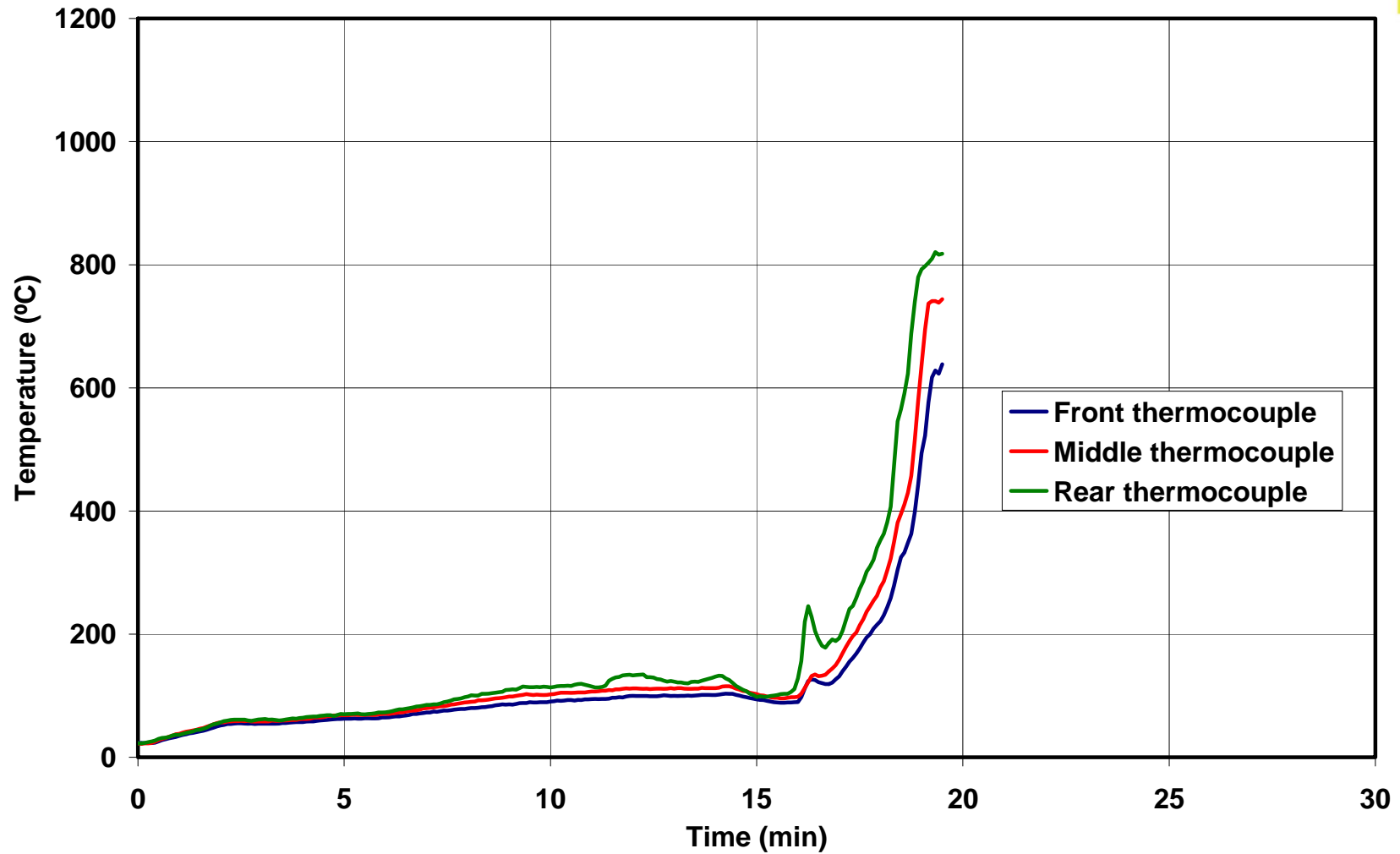
New style contents In lounge room



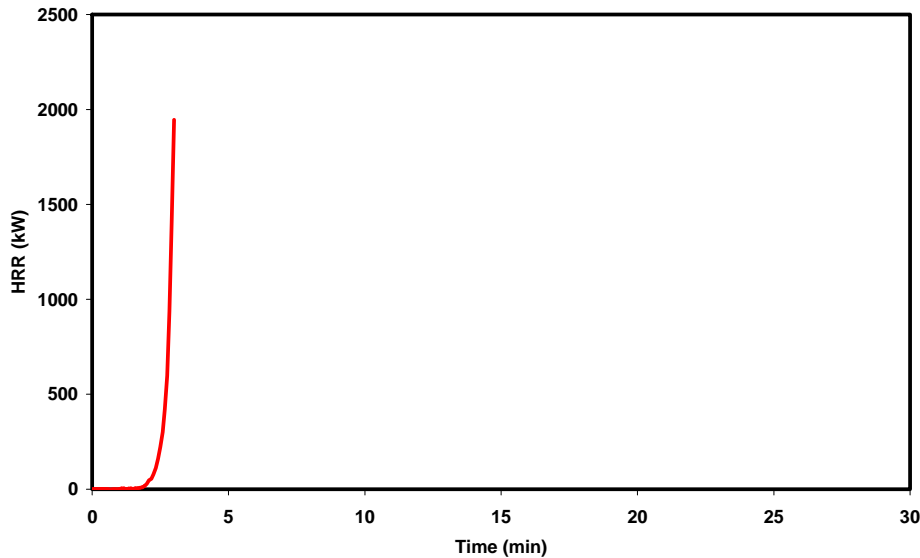
Old style contents in bedroom



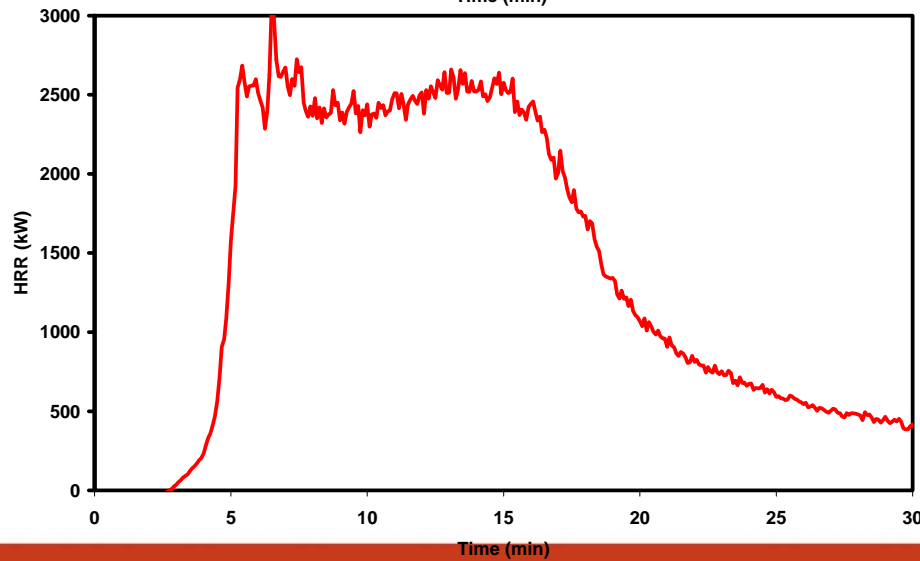
Old style contents in lounge room



Heat Release Rates

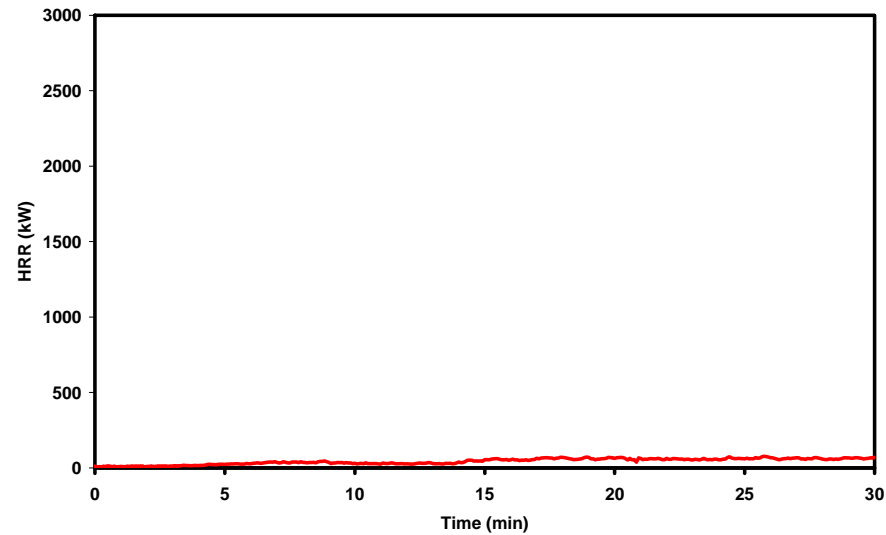


New style contents
In bedroom

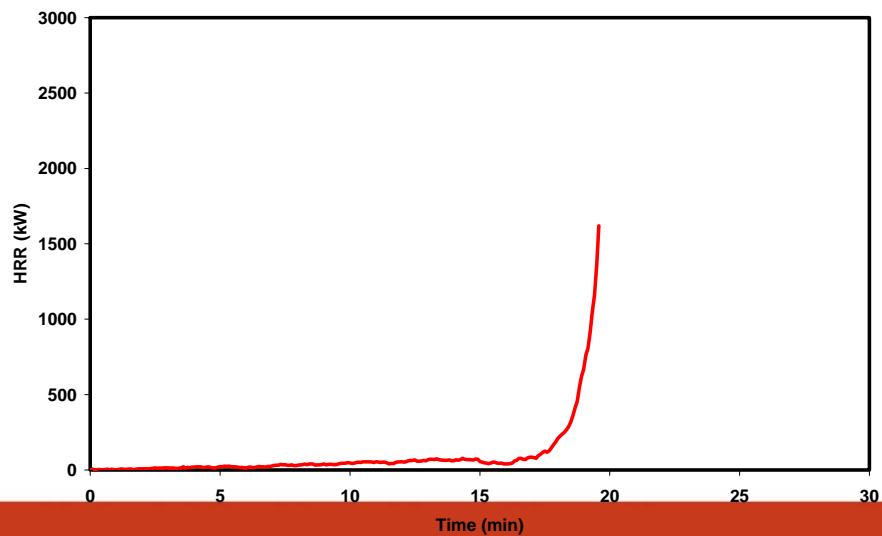


New style contents
In lounge room

Heat Release Rates



Old style contents
in bedroom



Old style contents
in lounge room



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CSIRO Burns



PLAY

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Discussion

- This experimental research proves that rooms containing modern furniture and contents CAN achieve flashover in less than three minutes.
- And that modern furniture and contents does have a greater heat release rate than older style furniture and contents.
- However, fire fatality rates are falling.....
- Why ?
- What are we doing right ?
- Its important to know because.....

Implications on Policy and Practice



- Media
- Fire Cover Models
- Intelligence and evidence gathering
- Situational awareness
- Evidence based approach – Doonside Project
- NSW Fire Brigades Lessons Learned Centre

Conclusion

- The value of joint research
- Further research
 - Chemical analysis of smoke from residential fires
 - Lightweight housing construction
 - Construction materials such as sandwich panels
 - Effectiveness of residential sprinklers

Acknowledgements



- This paper is based on the Joint NSWFB / CSIRO Stages Two & Four Report, “Changing Levels of Fire Safety in Class 1 Dwellings”. That report was based on the work of a project team coordinated by Vince Dowling CSIRO Fire Science and Technology Laboratory. Thanks also to Damon Chamberlain Technical Writer from NSWFB’s Fire Investigation and Research Unit; Steven Apps for assistance in conducting the experiments; and Ms Bronwyn Hilton for assistance in videotaping the experiments.
- The author would also like to thank Prof. Ian Thomas of VUT for permission to use the Fire Test Facility at Fiskville.
- Diagrams used in this paper are from the NSWFB / CSIRO Stages Two and & Four Report “Changing levels of fire safety in Class 1 dwellings”.

Questions ?



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