"What do the Grenfell Inquiry and Hackitt Review tell us about what went wrong with the Regulations and what is wrong with the culture?"

Dr Jonathan Evans
CEO Ash and Lacy

12 September 2019

ASH & LACY

Question Time, May 17 2018, BBC 1 10:30pm

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Content

- Garnock Court, Irvine 1999
- Building Regulations vs Guidance
- Cladding Materials
- The Public Inquiry
- The Hackitt Review
- Resistance to the combustible ban

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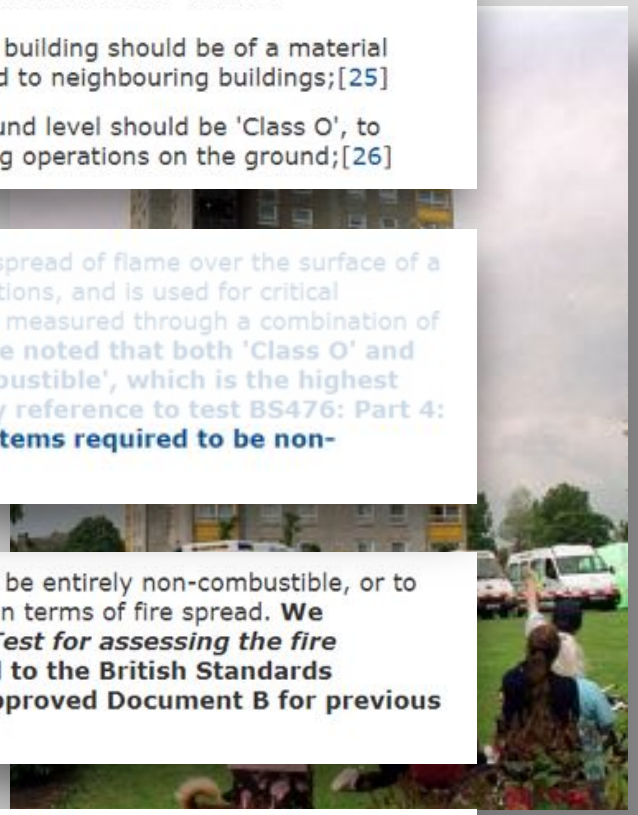
1999 Garnock and EFRA Committee

(a) Any insulation material used in cladding on buildings over 20 metres tall should be of 'limited combustibility'[23];
(b) External surfaces (and hence cladding) closer than 1 metre to another building should be of a material classified as 'Class O' for spread of fire[24], to reduce the risk of fire spread to neighbouring buildings;[25]

(c) External surfaces (and hence cladding) more than 20 metres from ground level should be 'Class O', to reduce the risk of fire at heights which are difficult to reach from firefighting operations on the ground;[26]

24 'Class O' is a classification designed to limit the fire propagation and the spread of flame over the surface of a material. This classification is defined for the purposes of the Building Regulations, and is used for critical situations where a particularly high standard of performance is required. It is measured through a combination of test results from BS476: Part 6: 1989 and BS476: Part 7: 1987. **It should be noted that both 'Class O' and 'limited combustibility' are different from the classification 'non-combustible', which is the highest level of material performance on exposure to fire, and is measured by reference to test BS476: Part 4: 1970 or Part 11: 1982. In no circumstances are external cladding systems required to be non-combustible. Back**



20. We believe that all external cladding systems should be required either to be entirely non-combustible, or to be proven through full-scale testing not to pose an unacceptable level of risk in terms of fire spread. **We therefore recommend that compliance with the standards set in the *'Test for assessing the fire performance of external cladding systems'*, which has been submitted to the British Standards Institution for adoption as a British Standard,[52] be substituted in Approved Document B for previous requirements relating to the fire safety of external cladding systems.**

- **Notwithstanding what we have said in paragraph 18 above, we do not believe that it should take a serious fire in which many people *are* killed before all reasonable steps are taken towards minimising the risks (paragraph 19).**
- **We therefore recommend that compliance with the standards set in the *'Test for assessing the fire performance of external cladding systems'*, which has been submitted to the British Standards Institution for adoption as a British Standard, be substituted in Approved Document B for previous requirements relating to the fire safety of external cladding systems (paragraph 20).**

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Building Regulations 2010

External Fire Spread

B4.—(1) The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building.

(2) The roof of the building shall adequately resist the spread of fire over the roof and from one building to another, having regard to the use and position of the building.

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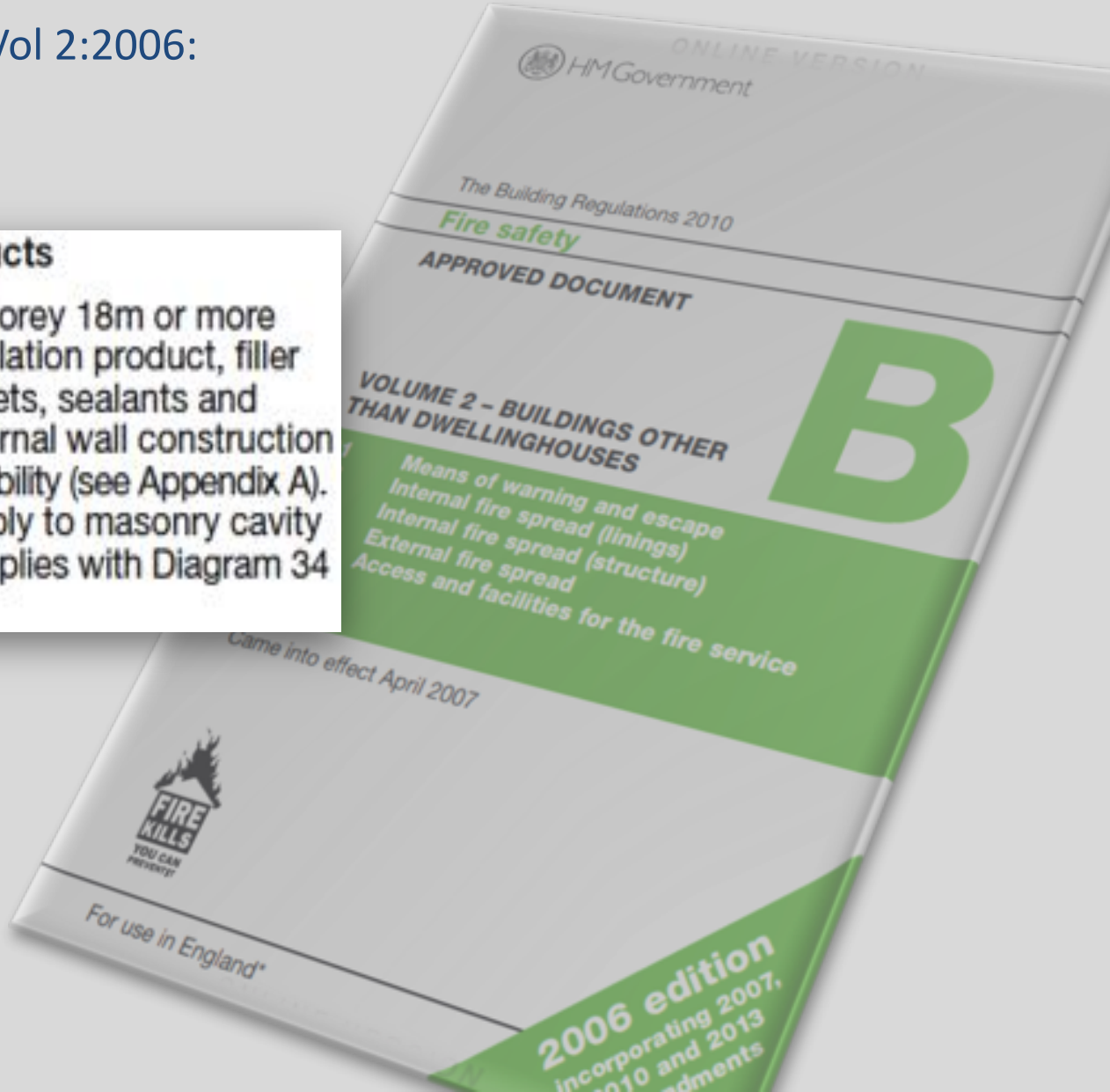
Regulations and Approved Document B

Approved Document B, Vol 2:2006:

Insulation Materials/Products

12.7 In a building with a storey 18m or more above ground level any insulation product, filler material (not including gaskets, sealants and similar) etc. used in the external wall construction should be of limited combustibility (see Appendix A). This restriction does not apply to masonry cavity wall construction which complies with Diagram 34 in Section 9.



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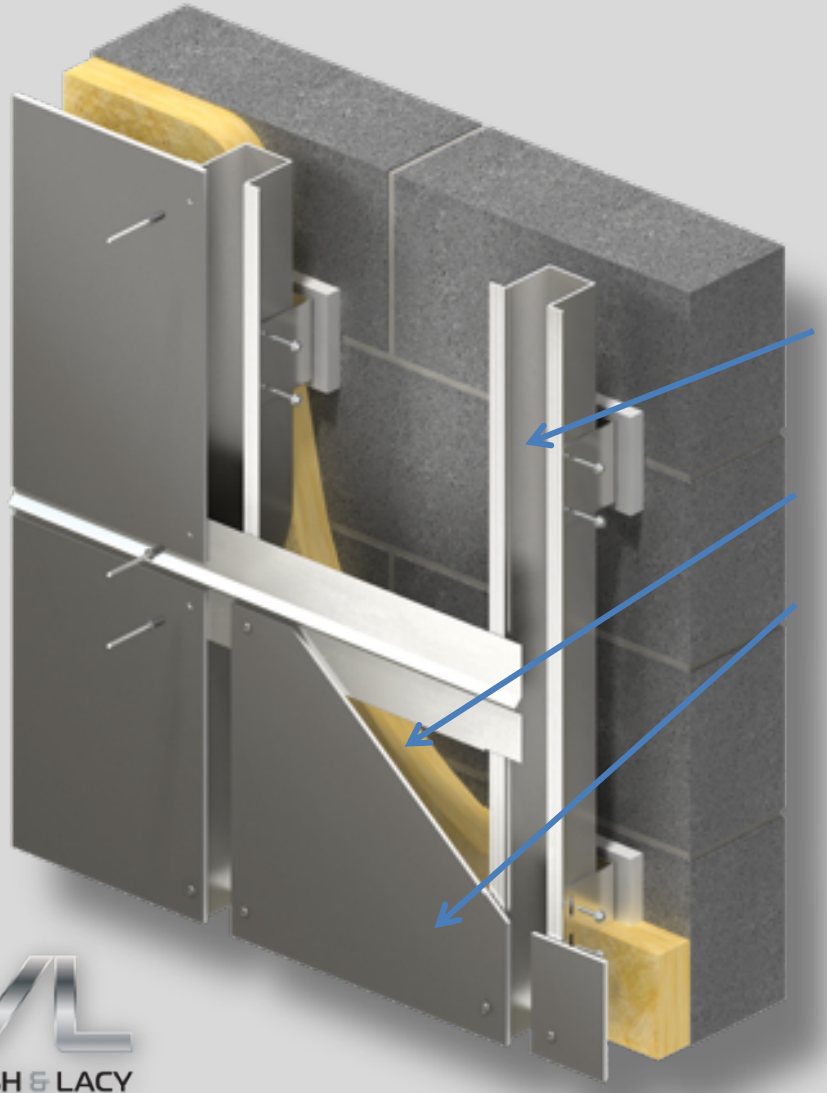
Terminology – cladding/envelope/facade



- **Mounting system** – helping hand bracket, mullion/transom
- **Insulation** – plastic/mineral
- **Cladding** /external finish/facing material

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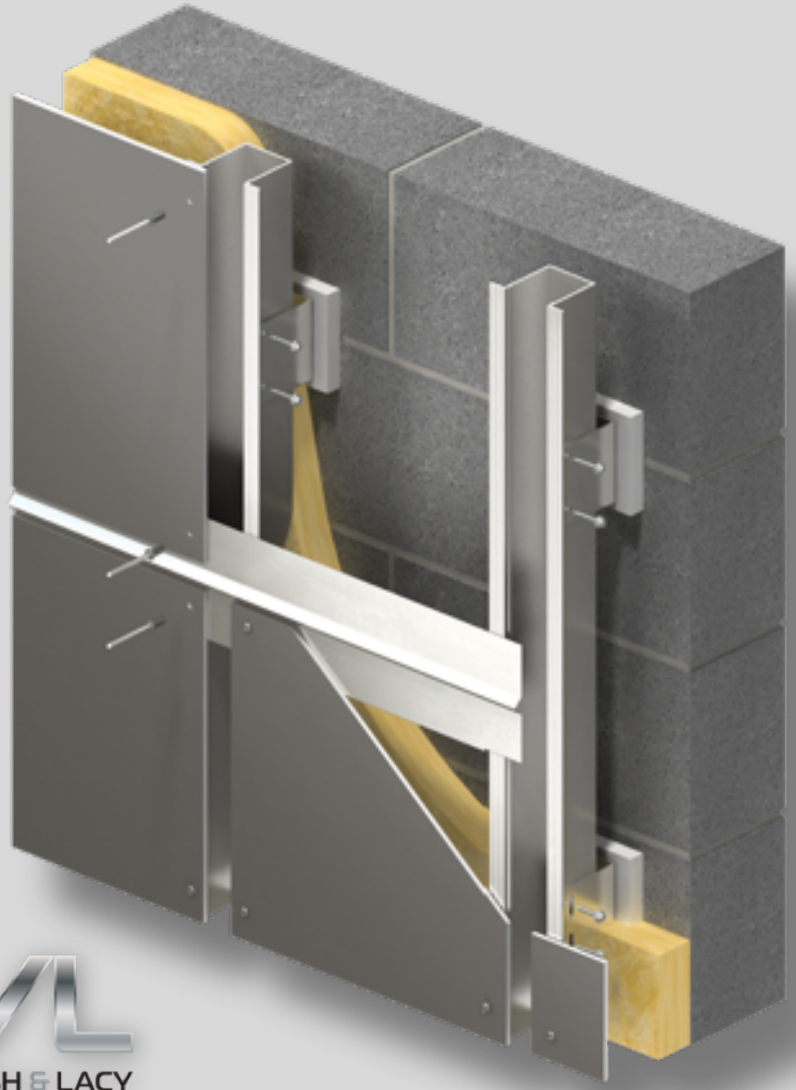
Terminology – Face fixed



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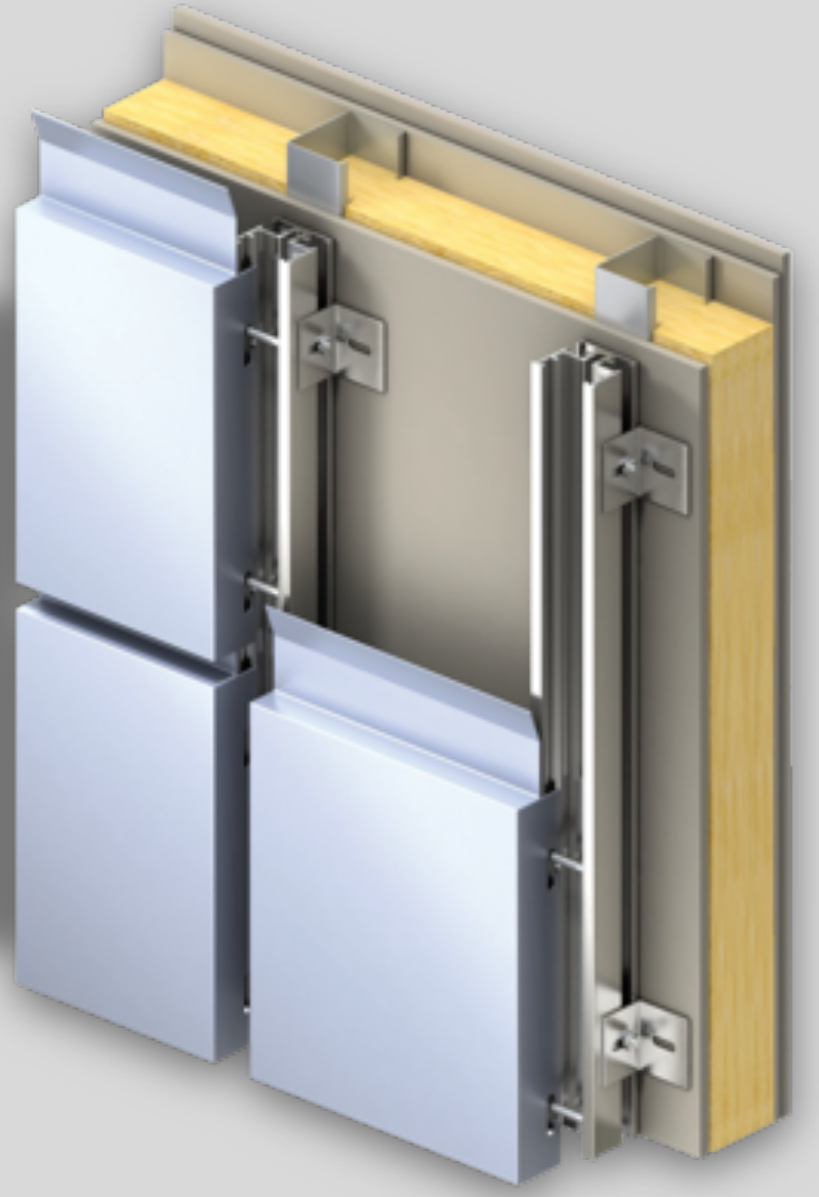
Terminology – Cassette



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Dr Barbara Lane, Grenfell Public Inquiry – 1,536 pages. 12 April 2018

Was the cladding in line with Guidance or not?

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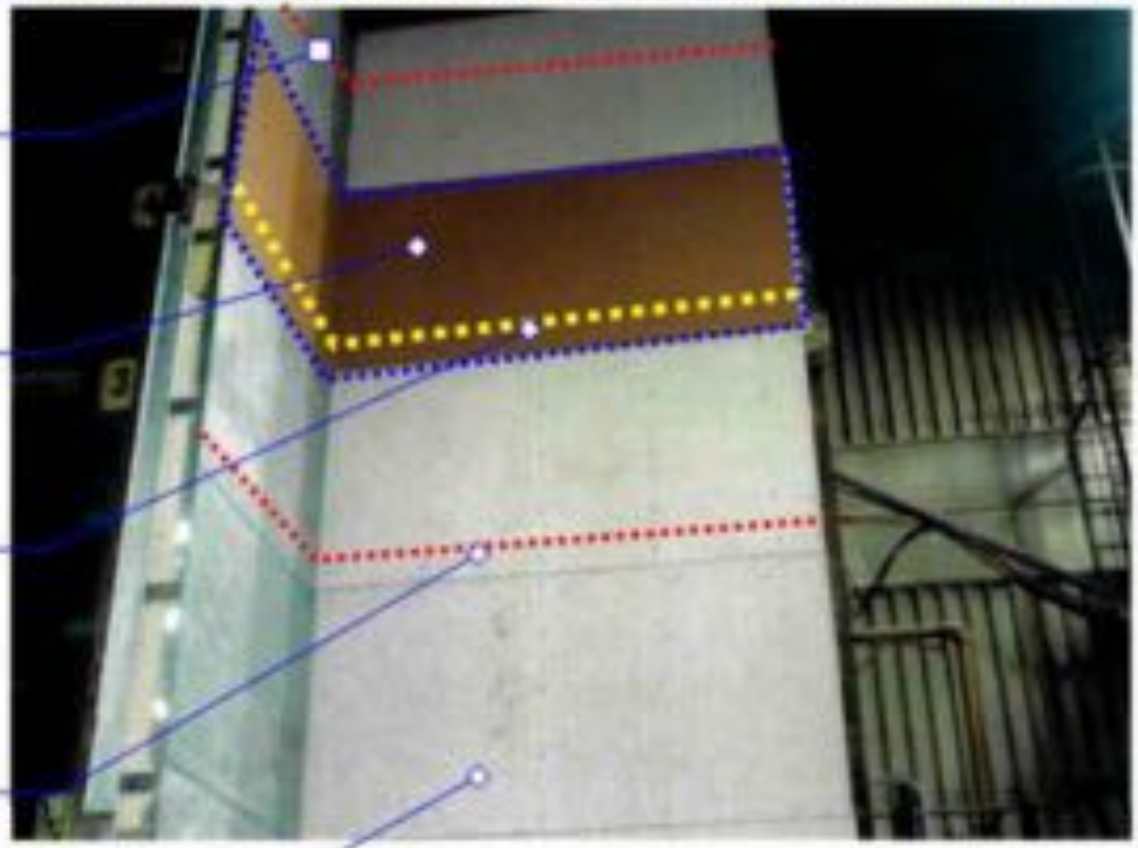
Withdrawn Celotex BS8414 2014 test

E8.1.6 In their letter Linklaters on behalf of Celotex further stated that *"a 6mm thick magnesium oxide board was used in at least two places on*

PHOTOGRAPH SUPPLIED BY LINKLATERS ON BEHALF OF CELOTEX 8th FEBRUARY 2018



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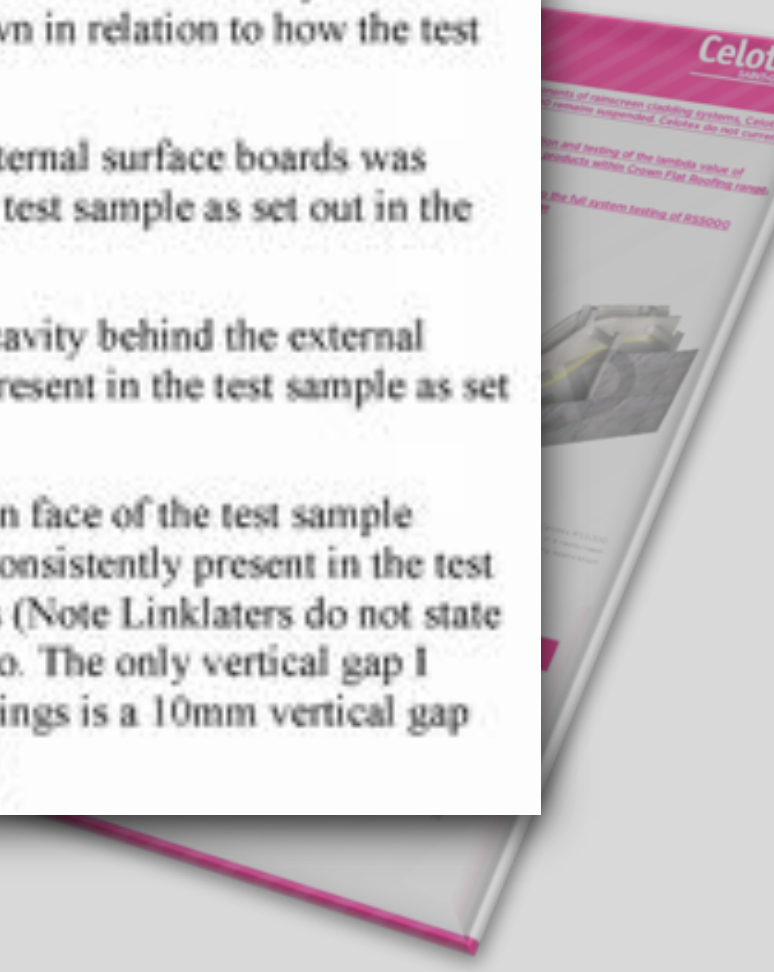
Withdrawn Celotex BS8414 2014 test

E8.1.21 In paragraph 4 of the 8 February 2018 Linklaters letter they also state the following items are currently unknown in relation to how the test sample was constructed:

a) whether a 10mm gap between the external surface boards was present or consistently present in the test sample as set out in the test drawings,

b) whether the 54mm deep ventilation cavity behind the external surface was present or consistently present in the test sample as set out in the test drawings; and

c) whether a vertical gap where the main face of the test sample meets the wing wall was present or consistently present in the test sample as set out in the test drawings (Note Linklaters do not state what vertical join they are referring to. The only vertical gap I have observed in the test report drawings is a 10mm vertical gap between the external surface boards)



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Dr Barbara Lane, Grenfell Public Inquiry – 1,536 pages. 12 April 2018

F1.1.16 The difference in opinion in industry has only deepened since the Grenfell fire. There has been much argument, very well publicised, regarding what the required performance of materials and products forming an external wall should be.

F1.1.17 The DCLG's decision to classify the core of an ACP panel as *Filler material*, and by means of this word categorise the core as an Insulating material/product, immediately after the Grenfell fire, has served to deepen this conflict.

F1.1.18 I do not agree with their interpretation and I have provided my analysis that has allowed me to draw this conclusion in this Appendix F.

F1.1.19 I have researched extensively on definitions for construction forms including rain screen cladding systems and how the word filler is applied.

F1.2.16 I have concluded that *Filler* has a formal definition within the construction industry, and the composites industry. I have not been able to attribute the definitions I have found to the core material of an ACP panel.

F1.2.17 I carried out my assessment herein, as until the DCLG post- Grenfell Fire clarification, I had no prior professional experience of the core of an ACP system, being termed *Filler material* within the category of Insulation Product/Material in ADB 2013.

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The Hackitt Review

Independent Review of Building Regulations and Fire Safety - Terms of Reference

In the light of the system failures which have been revealed by testing carried out in the wake of the Grenfell Tower disaster, Government has commissioned an urgent, independent review of building and fire safety regulations and their effectiveness.

The purpose is twofold - to make recommendations that will ensure we have a sufficiently robust regulatory system for the future and to provide further assurance to residents that the complete system is working to ensure the buildings they live in are safe and remain so.

The Review will draw upon international experience of regulatory frameworks and the frameworks covering other industries where exceptional events can lead to the risk of large scale fatalities.

The independent Review will be carried out by Dame Judith Hackitt. In reaching its conclusions, the Review will:

- map the current regulatory system (i.e. the regulations, guidance and processes) as it applies to new and existing buildings through planning, design, construction, maintenance, refurbishment and change management;
- consider the competencies, duties and balance of responsibilities of key individuals within the system in ensuring that fire safety standards are adhered to;
- assess the theoretical coherence of the current regulatory system and how it operates in practice
- compare this with other international regulatory systems for buildings and regulatory systems in other sectors with similar safety risks;
- make recommendations that ensure the regulatory system is fit for purpose with a particular focus on multi-occupancy high-rise residential buildings.

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The Hackitt Review – 9 Months

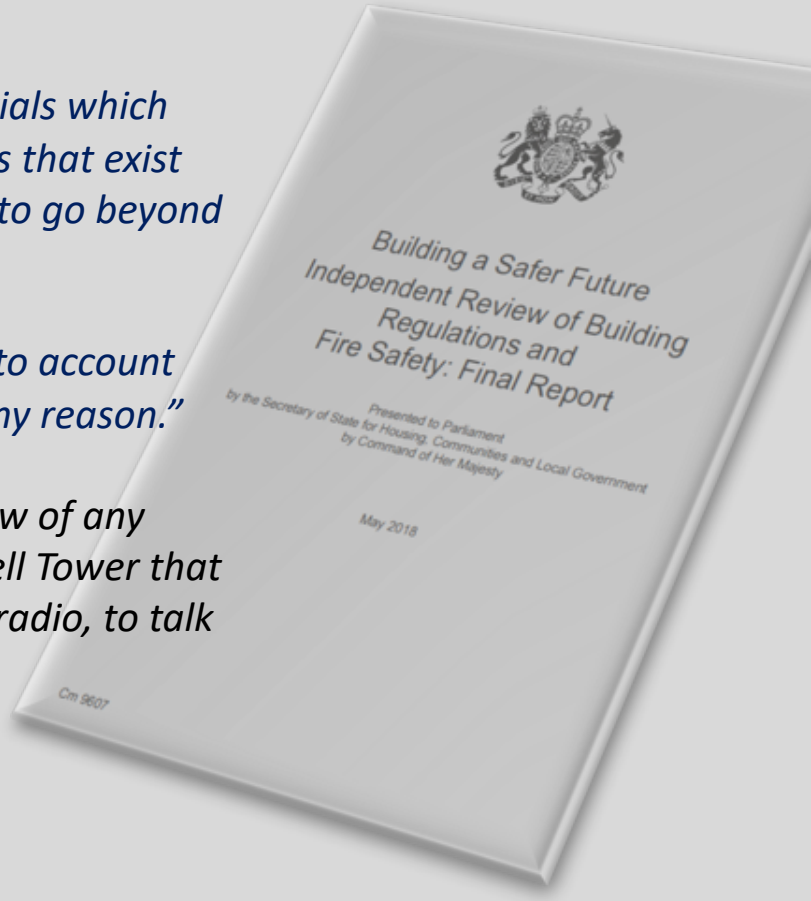
BBC Radio 4, Today – 8am 17 May 2018:

"I'm very clear that the regulations and the guidance that exist today already says that the only type of cladding that you can use on high-rise buildings must either be of limited combustibility or must be subject to a full test."

"I don't know of any systems containing combustible materials which have passed that test, so given that those are the standards that exist today, it's clear to me that to make this effective, you have to go beyond simply specifying what can and can't be used."

"You have to put gateways in place that hold those people to account and pick them up if they do try to shortcut the system for any reason."

Inside Housing 3:44pm - JH: "*What I meant was I don't know of any combustible materials of the type that were used on Grenfell Tower that have passed the test. I was being asked in an interview, on radio, to talk about a highly technical issue and I said that at the time*"



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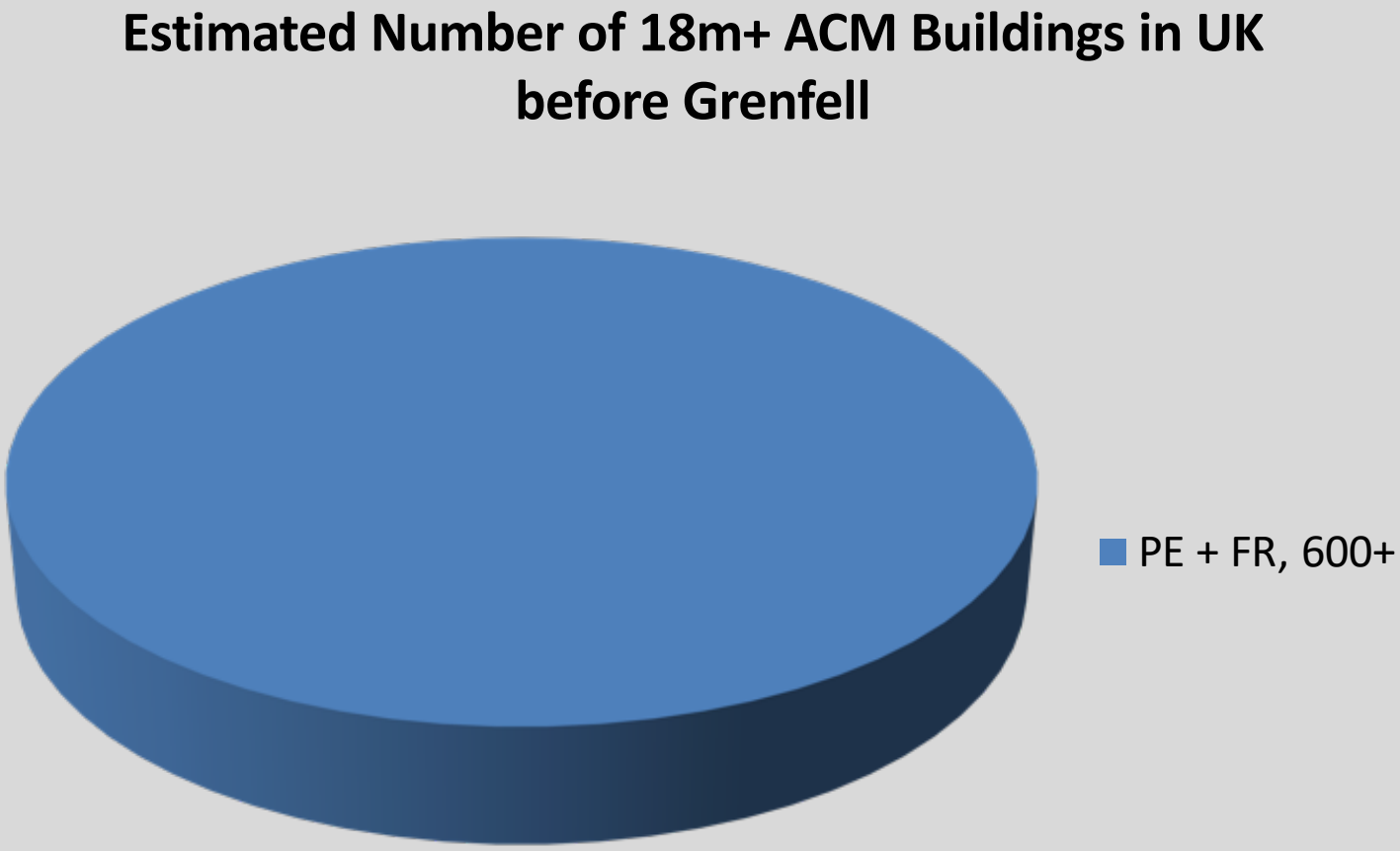
Does the evidence suggest ambiguity or lack of clarity?



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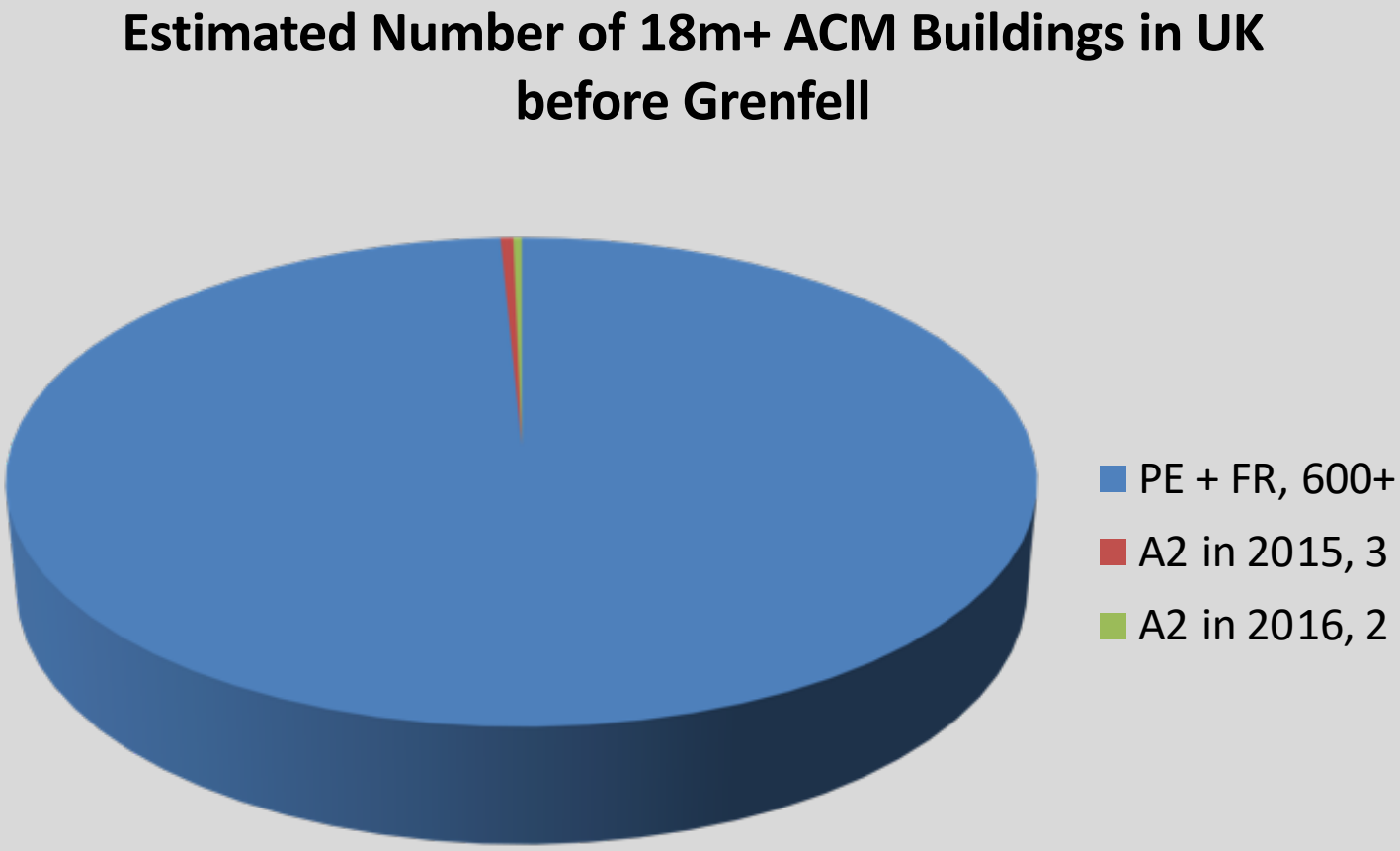
Does the evidence suggest ambiguity or lack of clarity?



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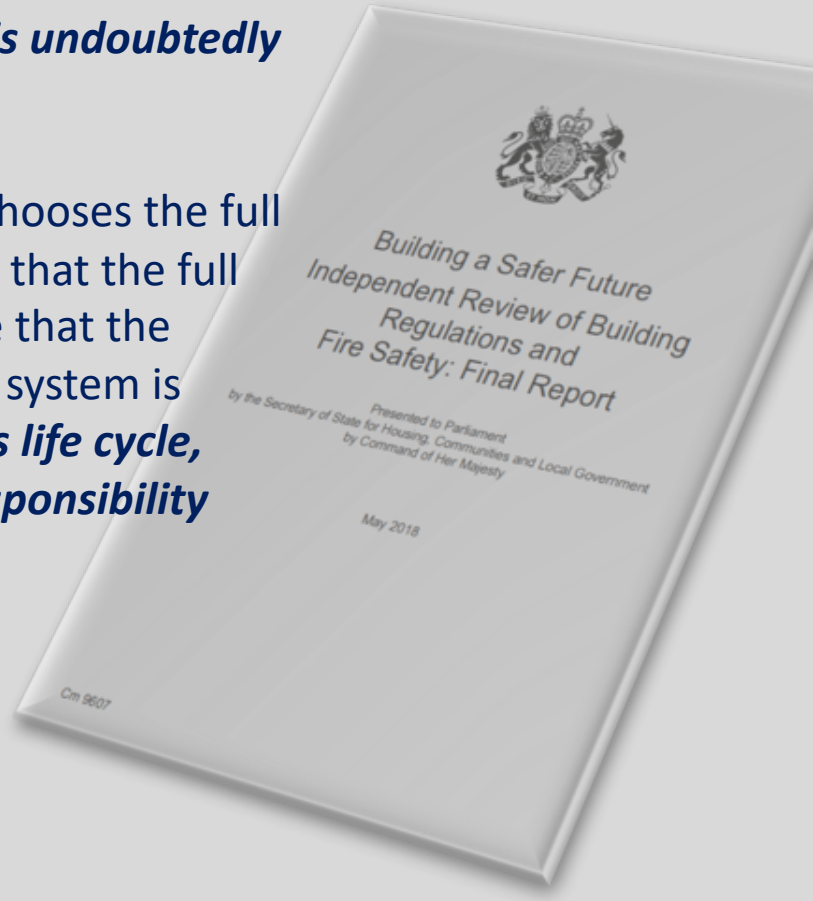
The Hackitt Review

6.12 The new regulatory framework should require industry and regulators to agree solutions which reduce risk ***'so far as is reasonably practicable'***

7.10 Using products which are non-combustible ***is undoubtedly the lower risk option*** …

… where the person undertaking the work chooses the full system testing option, not only must they ensure that the full system is tested but they will also need to ensure that the potential risks are mitigated by ensuring that the system is properly installed ***and maintained throughout its life cycle, which creates an ongoing and more onerous responsibility beyond supply and installation***



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Why is it difficult to make progress?

- Government
- Manufacturers of combustible and toxic materials
- Fire engineering industry
- Academic community
- **Fire brigades**

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Resistance to regulation and excuses - ‘It’s Technical’

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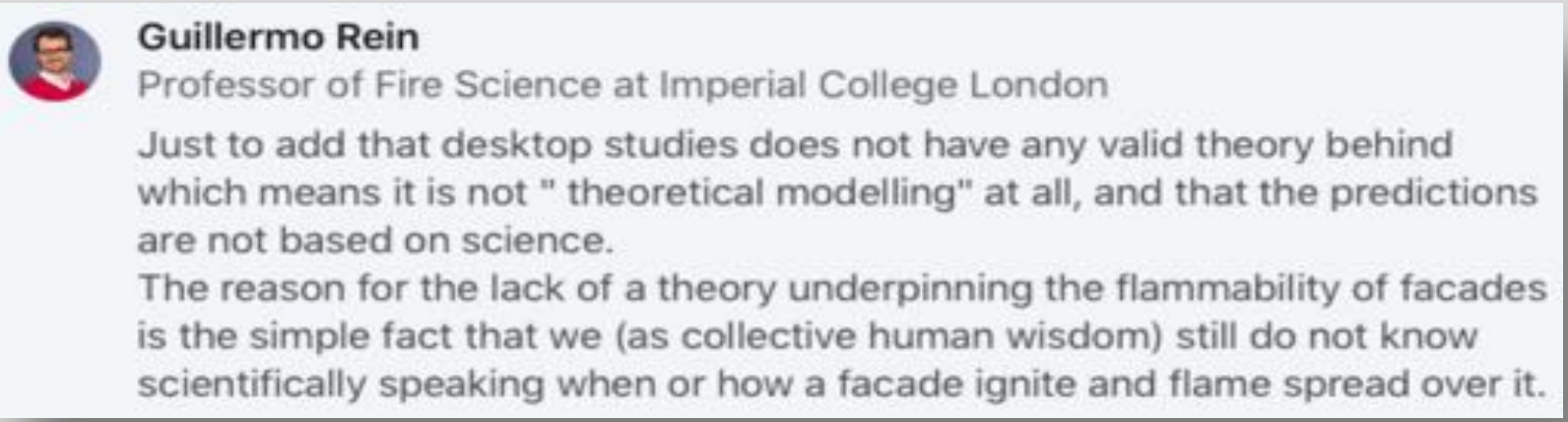
Resistance to regulation and excuses - ‘Leave it to Building Science’



Guillermo Rein
Professor of Fire Science at Imperial College London

Just to add that desktop studies does not have any valid theory behind which means it is not " theoretical modelling" at all, and that the predictions are not based on science.
The reason for the lack of a theory underpinning the flammability of facades is the simple fact that we (as collective human wisdom) still do not know scientifically speaking when or how a facade ignite and flame spread over it.

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Resistance to regulation and excuses - ‘Prescription thwarts innovation’

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Resistance to regulation and excuses - ‘We need to look at industries that get it right’

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Resistance to regulation and excuses - ‘It needs culture change’

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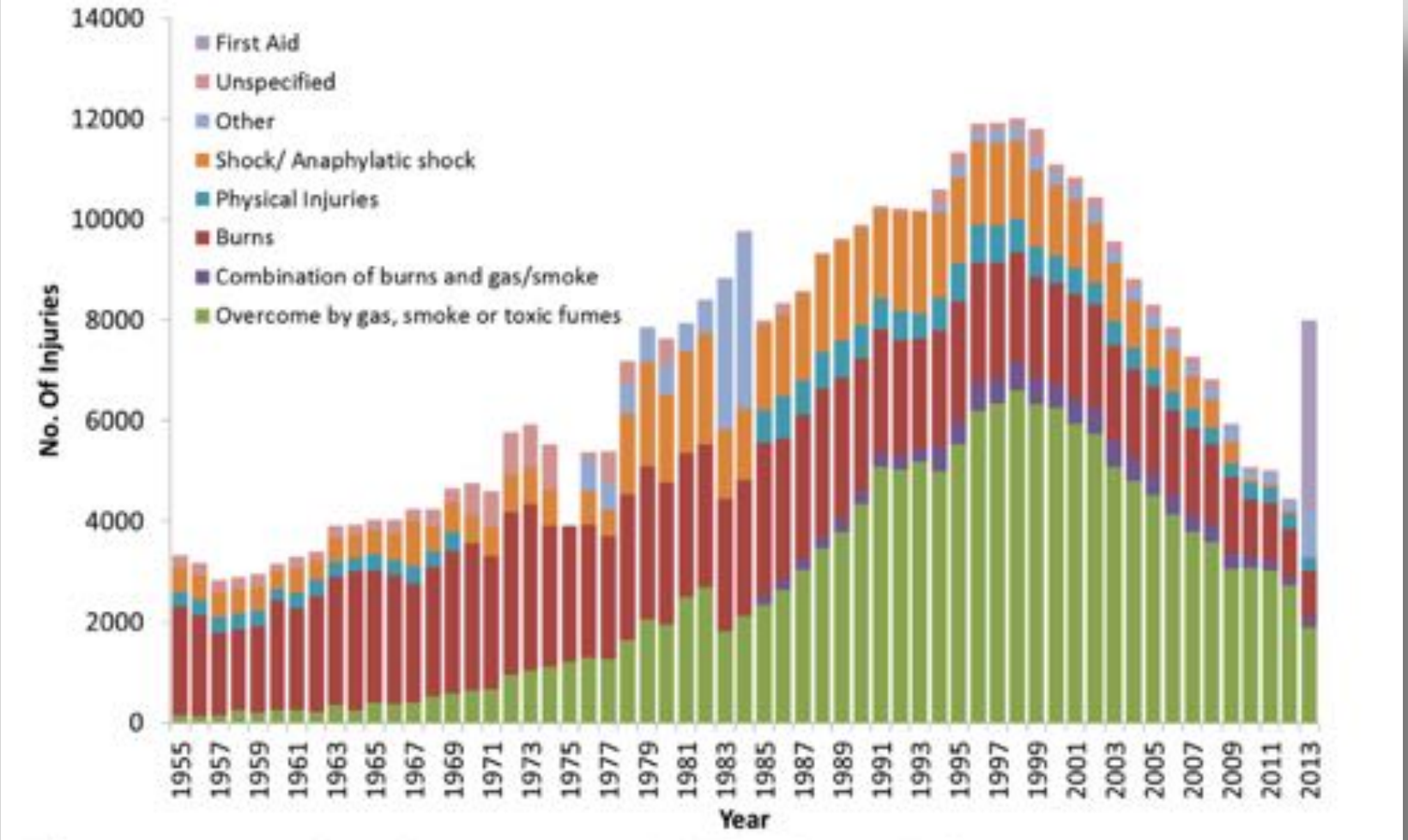
Death and injury rates by smoke



UK fire injuries requiring hospital treatment, 1955-2013 (UK Fire Statistics 2013)

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FPA/UCLan Research 2018

Glockling, Stec, Hull, Evans

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FPA/UCLan Research 2018

Glockling, Stec, Hull, Evans

Figure 5 - Phenolic insulated system with A2 ACM panels

Figure 6 - PIR insulated system with PE ACM panels (note test had to be stopped early, after 12 minutes)

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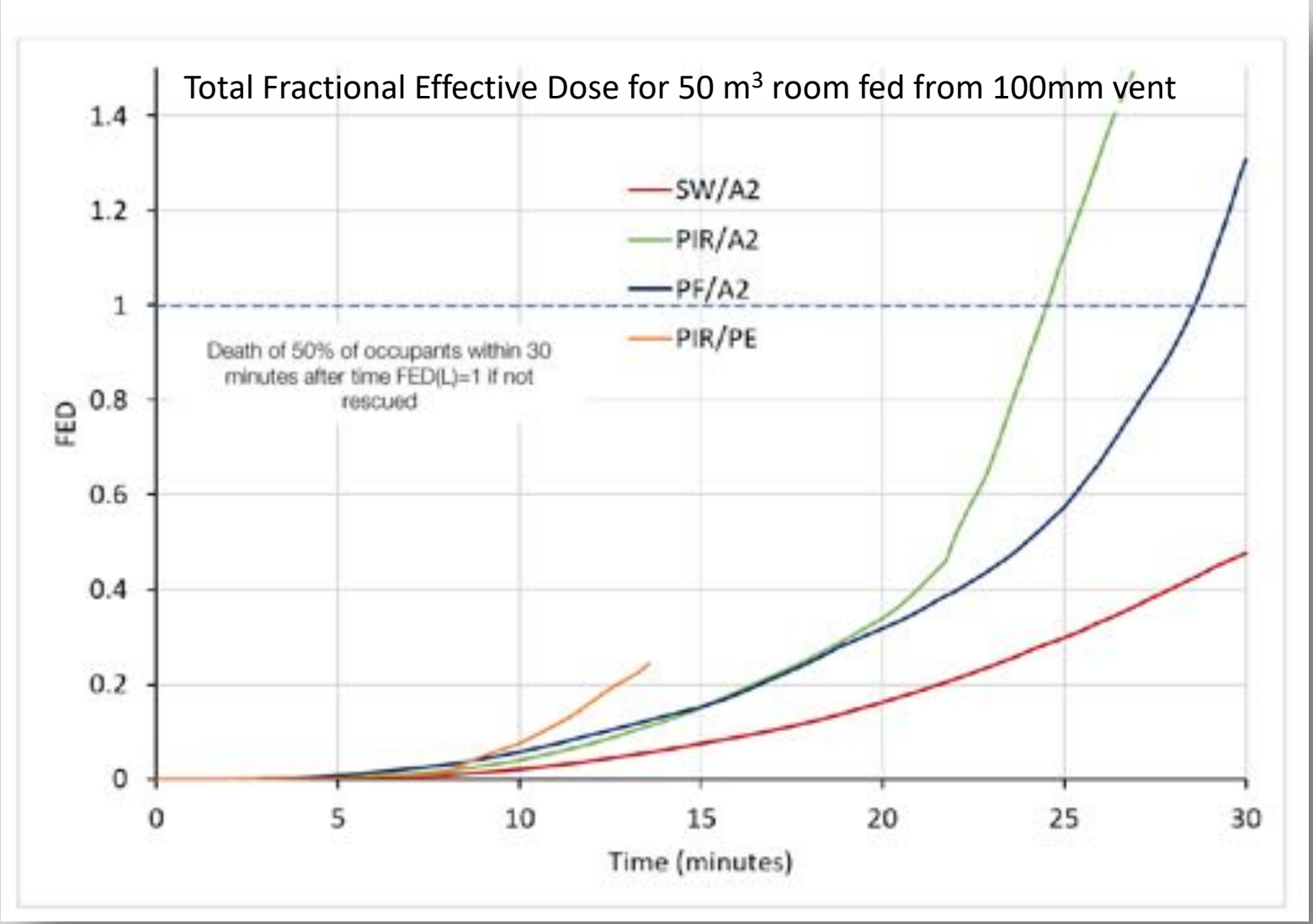
FPA Research 2018 Glockling, Stec, Hull, Evans



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Environmental

- Microplastics
- Recycling – Landfill, End of Life Solutions for thermoset plastics
- Contamination from fires
- Polyurethane foam market in 2018 - $50bn

  growing at 8% CAGR

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Environmental - microplastics

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