Chapter 3

Smoke alarms: what, where and whose responsibility?

3.1 Australia has experienced several fatal fire incidents in recent years, particularly in Queensland. In this context, the type, location and use of smoke alarms were a key focus throughout this inquiry. The committee heard a range of evidence about ionisation and photoelectric smoke alarms, including the different types of fires they are intended to detect; the cost of different types of smoke alarms; and where in residential properties smoke alarms ought to be positioned.

3.2 This chapter considers some of these issues, particularly:

- whether ionisation or photoelectric smoke alarms are most appropriate for residential use;
- where smoke alarms should be positioned in residential properties, and whether smoke alarms should be mandatory in sleeping areas; and
- who should have responsibility for ensuring smoke alarms are installed in residential properties and whether the current regulatory scheme needs to be amended.

Ionisation or photoelectric smoke alarms?

3.3 Both ionisation and photoelectric smoke alarms can be used in Australian residential properties under the Building Code of Australia (BCA) and Australian Standard (AS) 3786, except in the Northern Territory where only photoelectric alarms are permissible.

3.4 Ionisation and photoelectric smoke alarms detect smoke in different ways. Photoelectric alarms:

> use a light beam aimed through the detection chamber but away from a light sensor. When smoke enters the detection chamber it scatters the light beam allowing some light to reflect onto the sensor which activates the alarm.[1]

3.5 In contrast, ionisation alarms:

> …use a small amount of radioactive material positioned between two electrically charged plates. This ionises the air and allows a current to pass through the air between the plates. When smoke enters the detection chamber it reduces the current by disrupting the flow of ions between the plates. The smoke alarm detects the drop in current and activates the alarm.[2]

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1 Metropolitan Fire and Emergency Services Board (MFB), *Submission 4*, p. 6.

2 MFB, *Submission 4*, p. 6.

3.6 The most succinct description is that photoelectric smoke alarms 'see' smoke while ionisation smoke alarms 'smell' smoke.

3.7 A number of submitters and witnesses discussed the relative merits of both types of smoke alarm: a key point of contention was whether ionisation smoke alarms are the most appropriate for use in a residential setting, considering the most common house fire incidents.

3.8 Most fatal residential fires take place at night,[3] primarily between 8.00 pm and 8.00 am, and peaking between midnight and 4.00 am.[4] There are two stages of fire: smouldering and flaming. Smouldering fires 'represent a slow surface reaction between a solid fuel and oxygen in the air resulting in inefficient burning of the fuel', producing visible smoke of a large particle size.[5] Flaming fires result when heat transferred to the surface of a burning fuel forms combustible gases which mix with oxygen in the air and burn in a hot luminous region referred to as the flame, develop rapidly and produce fine particles of smoke;[6] The Fire Protection Association Australia (FPA) submitted that, '[g]iven the types of materials used in furnishings and floor coverings etc. and the likely ignition sources within a residential occupancy, the most likely fire type to be encountered whilst occupants are asleep is a smouldering fire producing visible smoke'.[7]

3.9 Commissioner Mullins of the Australasian Fire and Emergency Service Authorities Council (AFAC) stated that smouldering fires also present a significant risk to sleeping occupants, because they produce toxic smoke which inhibits a person's ability to wake up:

> …A smouldering fire is more lethal than a flaming fire…A flaming fire produces water vapour, a lot of carbon and soot and carbon monoxide and carbon dioxide. Carbon monoxide is toxic. I will explain that in a moment. Carbon dioxide can exclude oxygen and asphyxiate. It is about 10 parts CO2 to one part carbon monoxide in a flaming fire, because there is plenty of oxygen, so it combines to form CO2 instead of CO, so it is less toxic. But the heat and the fire travel, making it untenable very quickly.
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> The smouldering fire produces about the same amounts of carbon monoxide and carbon dioxide. If a person is asleep and they breathe in carbon monoxide their sense of smell is dulled and they will not wake up to the smell of smoke…Carbon monoxide has more of an affinity to red blood cells, which transport oxygen around the body, than oxygen so it will push out the oxygen and bond with the red blood cells. People will go into a

3 South Australian Fire Service (SAFS), *Submission 1*, p. 2.

4 MFB, *Submission 4*, Attachment 1, *Essential Knowledge Basic Home Fire Safety Learning Resource*, p. 21.

5 Fire Protection Association Australia (FPA), *Submission 18*, p. 8.

6 FPA, *Submission 18*, p. 8.

7 FPA, *Submission 18*, p. 9.

> deeper sleep until they actually become unconscious and they will not wake up. They cannot wake up. They are actually unconscious.
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> The amount of carbon monoxide in the bloodstream can lead to the muscles that are looking for oxygen to operate the cells in the muscles. The heart muscle will just give up, because there is not enough oxygen. It is very insidious…You cannot just give [the person] oxygen. There are not enough red blood cells available to take it on.[8]

3.10 The FPA agreed that the level of fire safety risk is highest when occupants are sleeping because 'human senses are dulled during sleep and response time to any fire that is likely to start is increased'.[9]

3.11 Several submitters made particular reference to the increased risk of fire 'flashover' in modern homes. Fire flashover describes the situation in which a room and its contents become so hot that it pyrolyses, meaning that flammable vapours are given off.[10] These flammable vapours, known as hydrocarbons, then ignite. AFAC stated:

> What we find these days is that typical furnishings…have polyurethane foam…[which] burns at a far higher heat than wood, cotton or anything else, so very high temperatures. So it heats up the room far more quickly, and even the paints we have on our walls have plastics in them, so they give off hydrocarbons. Our carpet is probably synthetic and gives off hydrocarbons very quickly; the wool would not have. So there is much quicker fire development…when it is in the smouldering phase is when you have to get the warning, because you might have two to three minutes to get out of the place. So you cannot have a smoke alarm and say, "When it's flaming, it'll get me out." It is all too late. By then it is too late.[11]

3.12 The Commonwealth Scientific and Industrial Research Organisation (CSIRO) likewise stated that:

> …much of the existing research is not reflective of the new materials used in modern housing construction and furnishings. Similarly, earlier research does not always reflect room configurations and open plan living areas found in contemporary Australian homes. On this basis, CSIRO would suggest Australia considers a review of existing research, addressing gaps in understanding of modern materials and construction techniques. New research should address detection technologies and the requirements for installation, including the quantity and location through the building.

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8 Commissioner Greg Mullins, President, Australasian Fire and Emergency Service Authorities Council (AFAC), *Committee Hansard*, 4 December 2015, pp 3-4.

9 FPA, *Submission 18*, p. 9.

10 Commissioner Mullins, AFAC, *Committee Hansard*, 4 December 2015, pp 7-8.

11 Commissioner Mullins, AFAC, *Committee Hansard*, 4 December 2015, pp 7-8.

3.13 The majority of submitters advocated for the use of photoelectric alarms over ionisation alarms in residential settings;[12] for example, the MFB stated that 'photoelectric alarms provide the best detection across a range of fire[s]'.[13] The committee heard that photoelectric alarms perform better where fires are smouldering,[14] and are generally less likely to produce false alarms,[15] particularly in and around kitchens and bathrooms.[16] Several witnesses called for a ban of ionisation smoke alarms.[17] The Logan House Fire Support Network (LHFSN) remarked:

> Ionisation alarms are not smoke alarms; they are flame detectors. Ban them and take them off the shelves. Mandate photoelectric smoke alarms to be installed in every bedroom and every hallway.[18]

3.14 The World Fire Safety Foundation (WFSF) was equally strident in its criticism:

> For almost 15 years, The World Fire Safety Foundation has warned that scientific evidence proves that ionisation smoke alarms are so defective that they should immediately be banned and recalled.[19]

3.15 AFAC stated:

> Research we have just recently conducted in New South Wales found that photoelectric alarms operated far more quickly than ionisation alarms for smouldering fires—sometimes tens of minutes, sometimes half an hour, sooner. In a flaming fire, ionisation alarms sometimes operated more quickly than a photoelectric alarm but the difference was seconds. We very clearly advocate only photoelectric alarms. My personal view is: ionisation alarms should be banned.[20]
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> People have said that one [alarm technology] is good for flaming fires and one is good for smouldering. In my experience as a firefighter just about every fire I have ever been to started as a smouldering fire and went

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12 See, SAFS, *Submission 1*, p. 2; Mr Adrian Butler, Chairman and Co-Founder, The World Fire Safety Foundation (WFSF), *Committee Hansard*, 26 October 2015, pp 15-16; Logan House Fire Support Network (LHFSN), *Submission 25*, p. 4; Triple Z Electrical, *Submission 23*, p. 1; FST, *Submission 27*, p. 3; Mr Keith Golinski, *Committee Hansard*, 26 October 2015, p. 24.

13 MFB, *Submission 4*, p. 3.

14 Mr Neil Savery, General Manager, Australian Building Codes Board (ABCB), *Committee Hansard*, 4 December 2015, p. 42.

15 MFB, *Submission* 4, Attachment 3, Analysis of Preventable Fire Fatalities of Older People and People with Disabilities: Risk Reduction Advice for the Community Sector, p. 36.

16 FRNSW, *Submission 20*, p. 5.

17 Commissioner Mullins, AFAC, *Committee Hansard*, 4 December 2015, p. 4; Mr Louie Naumovski, President, LHFSN, *Committee Hansard*, 26 October 2015, p. 3; and Mr Butler, WFSF, *Committee Hansard*, 26 October 2015, p. 12.

18 Mr Naumovski, LHFSN, *Committee Hansard*, 26 October 2015, p. 3.

19 Mr Butler, WFSF, *Committee Hansard*, 26 October 2015, p. 9.

20 Commissioner Mullins, AFAC, *Committee Hansard*, 4 December 2015, p. 4.

> through a stage until it became a flaming fire. To say that they are equal and good for different circumstances is to me a fallacy, an absolute myth.[21]

3.16 AFAC concluded that ionisation alarms are still being used in Australia because they meet a 'flawed Australian standard testing regime'.[22]

3.17 The FPA disagreed with this view, stating that 'ionisation alarms are not defective and do not fail relevant Australian standards or international tests'.[23] It did, however, state that ionisation technology 'has a particular usage, which in many cases in residential is inappropriate'.[24] It recommended that:

> All residential buildings should be fitted with photoelectric smoke alarms in the first instance in order to treat the highest fire safety risk in residential buildings. Ionisation smoke alarms are effective in detecting fast-flaming fires that contribute to some of the fire risk in residential buildings, which would only be considered supplementary to photoelectric smoke alarms.[25]

3.18 Standards Australia (SA) stated that photoelectric smoke alarms are a good minimum measure for use in residential properties because they respond to a broad range of fires:

> I think the general push has been that, as a minimum—if you are going to put the very minimum that is required into your home—you should really use photoelectric, because that will cover a broad spectrum of fires. Very rarely in a house fire are we going to have a pure fuel. Very rarely in a fire in a house, even if I am burning methylated spirits, will the only thing that is going to burn be methylated spirits. Sooner or later, it will break out onto the carpet or, if it was a kitchen fire, into the kitchen cabinets and so on…sooner or later you are going to have secondary material, secondary fuel sources, that will burn with a visible smoke. That is why the standards committee took the position it did. Even in a fast-flaming fire scenario, the belief is that photoelectric is not that far behind because you are never going to have a pure fuel.
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> …
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> But—on the question of banning ionisation—ionisation could still be a useful tool as a device supplementary to that minimum requirement. Banning them outright, in our opinion, is not necessarily the answer to the problem. But picking the most appropriate technology, the most fit-for-purpose technology, for the application is the issue.[26]

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21 Commissioner Mullins, AFAC, *Committee Hansard*, 4 December 2015, p. 3.

22 Commissioner Mullins, AFAC, *Committee Hansard*, 4 December 2015, p. 11.

23 Mr Matthew Wright, Chief Technical Officer, Deputy Chief Executive Officer, FPA, *Committee Hansard*, 4 December 2015, p. 12.

24 Mr Chris Orr, Chair of Technical Committee FP002, Standards Australia (SA), *Committee Hansard*, 22 February 2016, p. 14.

25 Mr Wright, FPA, *Committee Hansard*, 4 December 2015, p. 12.

26 Mr Orr, SA, *Committee Hansard*, 22 February 2016, p. 6.

3.19 The Australian Building Codes Board (ABCB) disagreed with this evidence. It stated that 'there has been no independent peer reviewed, robust and verifiable evidence provided to it that would support the calls to ban ionisation smoke alarms'.[27] It also submitted that:

> Another issue we need to consider is the number of fires that are flaming and the number of fires that are smouldering. We do not have that evidence either. We do not actually know. We understand that photoelectric perform better with a smouldering fire. If you think about a hotel situation or a hospital or other type of care facility, the type of fire that might initiate in that type of environment probably would be a smouldering fire. But in your own home, we know from other evidence, the majority of fires start in kitchens. They are not, necessarily, going to be a smouldering fire[28]

3.20 The CSIRO, which provides the only facility for testing smoke alarms for Australian Standard accreditation, explained that it is difficult to compare the operation of ionisation and photoelectric smoke alarms. While both alarms must activate within a particular range of smoke obscuration (that is, how dense the smoke is and how much it obscures the air), photoelectric smoke detectors are measured using a photoelectric ruler,[29] and ionisation alarms are measured against a reference ionisation detector.[30] Put simply:

> It is the same test, just with a different requirement. We compare photoelectrics to an optical measuring device. Ionisations are measured to a reference ionisation measuring device. So we have two sets of reference instrumentation.[31]

3.21 The CSIRO explained:

> We do not report the results on time; they are reported on the level of the measuring instruments at the point that the detector goes into alarm. The time is irrelevant in that test criterion. What is reported is the reference instruments' reading at the time of operation.[32]

3.22 The CSIRO also emphasised that:

> The new standard…actually requires photoelectrics to perform to a flaming fire and ionisation to perform to a smouldering fire. I think it is a much better test regime; however, the new standard was published in 2014. It was adopted into the building code in May this year, and the building code

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27 Mr Savery, ABCB, *Committee Hansard*, 4 December 2015, p. 41.

28 Mr Matthew McDonald, Group Manager, ABCB, *Committee Hansard*, 4 December 2015, p. 46.

29 Mr Mark Burgess, Executive Manager of Services, Commonwealth Scientific and Industrial Research Organisation (CSIRO), *Committee Hansard*, p. 37.

30 Mr Burgess, CSIRO, *Committee Hansard*, p. 37.

31 Mr Burgess, CSIRO, *Committee Hansard*, p. 41.

32 Mr Burgess, CSIRO, *Committee Hansard*, p. 39.

> would be required for the manufacturing community, so manufacturers have two years to retest all their current stock.[33]

Cost of smoke alarms

3.23 The committee heard evidence about the cost of photoelectric smoke alarms as opposed to ionisation alarms, and the impact this has on consumers' purchasing decisions. Mr Naumovski informed the committee that while photoelectric alarms have decreased in cost, ionisation alarms are still significantly cheaper.[34] He argued, however, that photoelectric alarms save money over time:

> …you can purchase a nine-volt ionisation alarm for $10, but you have to buy a nine-volt battery each year. So you have to pay about $6 or $7 each year—and you have got to try and remember to replace it, or, if it false alarms, you are going to disconnect it. At the end of the 10-year period, that nine-volt alarm has cost you about $80 or $90. You can buy a photoelectric 10-year—the best technology out there right now—for $50. You are actually saving money.[35]

3.24 Mr Keith Golinski submitted that, when compared with the costs associated with house fires, it could be of financial benefit to governments to provide smoke alarms free of charge:

> I believe that the photoelectrics cost $2.50 each to produce whereas ionisations cost $1.25 each to produce. The medical costs, insurance costs and human costs are astronomical now, so even providing a million smoke alarms would be a saving. Handing out smoke alarms would be a great way to save money. They are not an expensive item. It just seems so ridiculous that such an inexpensive item is not provided.[36]

3.25 In regards to regulating new housing construction, the Housing Industry Association (HIA) indicated that it would not object to the additional cost of photoelectric smoke alarms:

> …on any cost differential between photoelectric and ionisation we would happily concede that cost, given the issue we are talking about here. Again, given that the provision now is for smoke detectors to be hard-wired and also interconnected, the differences in the products themselves I suspect would be relatively negligible in the price of the home, if it is proven that that is what the ideal solution is.[37]

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33 Mr Burgess, CSIRO, p. 37.

34 Mr Naumovski , LHFSN, *Committee Hansard*, 26 October 2015, p. 5.

35 Mr Naumovski, LHFSN, *Committee Hansard*, 26 October 2015, p. 5.

36 Mr Golinski, *Committee Hansard*, 26 October 2015, p. 23.

37 Mr Greg Weller, National Director of Communications, Housing Industry Association (HIA), *Committee Hansard*, 4 December 2015, pp 33-34.

Location of smoke alarms

3.26 The BCA mandates the installation of smoke alarms in certain locations within a residential property, but not in bedrooms. Some states and territories do currently require smoke alarms to be installed in bedrooms in buildings of a particular classification, for example, existing Class 1b buildings in NSW,[38] and Class 1b 'budget accommodation' over two storeys high in QLD.[39]

3.27 The committee heard evidence suggesting that smoke alarms should be required in each bedroom of residential dwellings. Professors Thomas and Bruck conducted a study examining smoke alarms and the likelihood of them effectively notifying sleeping occupants of a smoke source. The study concluded:

> …the effective notification of occupants can only be achieved with smoke alarms in every room. Without them in every room the sound level in many locations is likely to be too low to achieve reliable notification, particularly of sleeping people but even of many people who are awake. This is generally the case with doors open but always the case with doors closed.
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> …in dwellings early detection of smoke can only be achieved with smoke alarms in every room. The time to detection (given a particular smoke source) is shown to be influenced by closed doors, the room in which the fire occurs, the location (room or hallway) of the detector, the type of detector and the smoke alarm manufacturer but the time to detection is particularly influenced by the type and form of the material that is burning.
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> Early detection **and** notification therefore requires interconnected smoke alarms in every room.[40]

3.28 Commissioner Mullins of AFAC likewise stated that he had attended fires where a person perished because the fire started in their own bedroom:

> …earlier this year in Campbelltown in Sydney we had a situation where a shiftworker was asleep in the morning and had the bedroom door closed. A fire started in a wardrobe. There was no smoke alarm in the bedroom. The fire got bigger. He slept through, and the smoke alarm in the hallway did not operate, because the smoke never reached it. He perished in that fire. We found that he had woken up, but it was too late.[41]

3.29 The FPA recommended that the BCA be amended to require alarms to be installed in sleeping areas,[42] or at least master bedrooms to improve occupant response to a fire.[43] The FPA stated that, assuming the household alarms are interconnected,

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38 *Environmental Planning and Assessment Regulation 2000* (NSW), reg. 186A(3).

39 *Queensland Development Code Mandatory Part 2.1 Fire Safety in Budget Accommodation Buildings*, p. 7

40 Professor Ian Thomas and Professor Dorothy Bruck, *Submission 17*, p. 11.

41 Commissioner Mullins, AFAC, *Committee Hansard*, 4 December 2015, p. 4.

42 Mr Wright, FPA, *Committee Hansard*, 4 December 2015, p. 12.

43 FPA, *Submission 18,* p. 20.

this would mean that 'the occupants of the master bedroom (in a family situation, the parents) are effectively the fire warden, who could then assist others if possible'.[44]

3.30 The ABCB agreed that installing more smoke alarms in homes, and interconnecting them, could lead to a decrease in fire fatalities. However, in a 2012 Regulatory Impact Statement (RIS) the ABCB argued that this would not be an appropriate level of minimum regulation. The Board stated that the interconnection of smoke alarms in every room of every house 'may be represented as best practice. As the National Construction Code (NCC) is a minimum regulation document it may be of value to consider a range of options between the status quo and [that option]'.[45] It stated that the ABCB:

> …operates under an intergovernmental agreement…[and]must have regard to a number of key objectives contained within the intergovernmental agreement: establish codes and standards that are the minimum necessary to achieve its mission…provide regulations that are proportional to the issue so that the benefits to society are greater than the costs…ensure that the competitive effects of regulation have been considered; and encourage a reduced reliance on regulation.[46]

3.31 The ABCB also emphasised that changes to the NCC would not automatically apply to existing building stock in all jurisdictions, and that, '[w]ithout State and Territory adoption it is likely to contribute to approximately 1.9% of the overall building stock'.[47]

Committee view

3.32 As discussed earlier in this chapter, many submitters and witnesses advocated for ionisation smoke alarms to be banned in residential settings on the basis of their perceived inferiority to photoelectric smoke alarms.

3.33 Early in the inquiry, the committee shared this view. However, as the inquiry progressed, and the committee's understanding of the differences between ionisation and photoelectric smoke alarms grew, it refined its thinking on this matter.

3.34 The committee is convinced that multiple, interconnected smoke alarms should be mandatory in all residential properties and agrees that photoelectric smoke alarms should be used in preference to ionisation smoke alarms. However, the committee does not agree that ionisation smoke alarms should be banned: photoelectric and ionisation smoke alarms detect different fires in different ways and are therefore fit for purpose in particular locations. The committee is also wary about the implications of banning outright ionisation smoke alarms: the committee believes

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44 FPA, *Submission 18*, p. 12.

45 ABCB, *Final Regulation Impact Statement for Decision: Assessment of options for residential smoke alarm provisions in the National Construction Code*, October 2012, p. 11.

46 Mr Savery, ABCB, *Committee Hansard*, 4 December 2015, p. 40.

47 ABCB, *Final Regulation Impact Statement for Decision: Assessment of options for residential smoke alarm provisions in the National Construction Code*, October 2012, p. 11.

it would be a grave error to potentially leave Australian households with the impression that no smoke alarm is better than an ionisation smoke alarm.

3.35 Across Australia, the committee believes that installation and maintenance of smoke alarms must be improved. Approaches by Australian governments to date have not succeeded, if some of the recent fire tragedies are indicative, and something must be done to ensure that all Australian homes are fitted with appropriate and working smoke alarms. It seems to the committee that the lack of smoke alarms, either because they have never been installed or because they are not operational, continues to be a significant concern with respect to residential fires.

3.36 Before discussing in more detail possible changes, the committee acknowledges the complexity of the current regulatory scheme. It could be said that there are actually nine similar yet separate regulatory schemes: eight operating in each state and territory, and one operating in relation to all newly constructed dwellings subject to the operation of the NCC. Change will not necessarily be easy, however, the committee believes that reform is necessary and must be tackled.

3.37 Making any amendments to the scheme to give effect to the committee's proposals (and applying them to every residential property in Australia, regardless of a property's classification or age) will require the support and participation of all states and territories: a number of organisations are involved in developing and implementing smoke alarm regulatory measures, and each state and territory has its own legislation dealing with smoke alarms. At present, the NCC has been adopted by each state and territory, but the agreement operates only in relation to new building stock. Many states and territories have extended some of the regulations to existing building stock, but the rules vary between building types, and between jurisdictions (see chapter 1). In this regard, the committee acknowledges comments by the ABCB that amending the NCC will not mean that improvements automatically apply to existing building stock, as well as its argument that some approach better than the status quo but not as ambitious as best practice should be attempted. The committee agrees with the first part of this statement but does not believe the challenge is insurmountable; the committee rejects the second part: Australia should undertake steps to achieve best practice for smoke alarms in residential settings.

3.38 In the committee's opinion, the following steps should be taken:

- the installation of interconnected, and preferably mains powered, photoelectric smoke alarms supplemented where appropriate by ionisation smoke alarms should be mandated for every residential property irrespective of classification or age;
- photoelectric and ionisation smoke alarms should be sited in appropriate locations within every residential property; that is, ionisation smoke alarms should be installed in locations where fast, hot fires are most likely to occur while photoelectric smoke alarms should be installed in locations where smouldering fires are most likely; and

- the current regulatory scheme, with the agreement and input of all Australian jurisdictions, must be amended to require the installation and maintenance of smoke alarms as outlined above.

3.39 The committee therefore recommends that the NCC (incorporating the BCA) is amended to require the installation of interconnected, and preferably mains powered, photoelectric smoke alarms, supplemented where appropriate by ionisation smoke alarms, in every residential property and specify the type of smoke alarm that must be used at different locations within each residential property, taking into account the different smoke detection properties of photoelectric and ionisation smoke alarms. To give effect to this change, the committee recommends that all state and territory governments adopt the amended NCC and agree to apply it to all residential properties, both new and old, and irrespective of the age of the property.

Recommendation 3

3.40 The committee recommends that the National Construction Code is amended to require the installation of interconnected, and preferably mains powered, photoelectric smoke alarms, supplemented where appropriate by ionisation smoke alarms, in every residential property and specify the type of smoke alarm to be used at different locations within each residential property, taking into account the different smoke detection properties of photoelectric and ionisation smoke alarms.

Recommendation 4

3.41 The committee recommends, to give effect to Recommendation 3, that all state and territory governments adopt the amended National Construction Code and agree to apply it to all residential properties, irrespective of the age of a property.

3.42 In some jurisdictions, the point at which a property is sold, tenanted or hired triggers the requirement that compliant smoke alarms be installed.[48] These are logical points at which a property's smoke alarms could be checked for compliance, given that they already typically involve scrutiny of the building's state of repair. Checking smoke alarms when properties are going to be rented or hired would help to ensure that occupants who may be unfamiliar with the property, or even with household fire safety, are living in a safe and compliant dwelling. It would also benefit building owners by ensuring that properties do not sit for extended periods of time with smoke alarms potentially having been disconnected or not maintained.

Recommendation 5

3.43 The committee recommends that all states and territories implement mandatory compliance checks of smoke alarms in residential properties whenever a property is sold, tenanted or hired.

48 See, *Fire and Emergency Regulations* (NT); *Residential Tenancy (Smoke Alarms) Regulations 2012* (TAS); and *Building Regulations 2012* (WA).

3.44 It is apparent that the inconsistency between jurisdictions and the lack of clear and simple information about smoke alarms from a known, trusted and centralised source means many people are currently unaware of their rights and responsibilities with regards to home fire safety.

3.45 The committee received the coronial findings from a devastating Victorian house fire which resulted in the deaths of three men in 2008,[49] which the committee regards as being particularly illustrative of this problem. This case involved a property that had been rented for some time, between different real estate agencies and without any direct landlord involvement, and where no person could definitively state whether any smoke alarms had been installed in the property and, if they had, whether or not the alarms had been maintained.[50] Coroner White stated that he was 'surprised by the lack of precise knowledge of the landlords as to the state of repair of a device so fundamental to the future safety of their tenants as a smoke detector'.[51] One of the surviving tenants stated that he had not even been sure of what a smoke detector looked like until the police showed him pictures of them on the internet.[52] Another tenant stated that they were not typically installed in his home country, so he was not familiar with them, nor was he aware that they would normally be fitted inside a house.[53] The Coroner commented that in Victoria:

> There is no specific section or regulation that specifies who is responsible for the maintenance and testing of smoke detector (sic) in a rented residence. The answer lies in the convoluted interrelationship between statute, common law and contractual principles.[54]

3.46 He recommended that:

- Victorian law be amended to ensure that all properties be fitted with hard-wired smoke alarms which have a 10 year tamper-proof battery as a backup, on every floor of every residence, regardless of the residence's age;[55]
- Victorian law be amended to clarify who bears responsibility for maintaining and testing smoke alarms;[56] and

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49 Metropolitan Fire and Emergency Services Board (MFB), *Submission 4*, Attachments 4-6, *Findings into Death Without Inquest*, COR 2008/0041 – 0043.

50 MFB, *Submission 4*, Attachments 4-6, *Findings into Death Without Inquest*, COR 2008/0041 - 0043, p. 11.

51 MFB, *Submission 4*, Attachments 4-6, *Findings into Death Without Inquest*, COR 2008/0041 - 0043, p. 12.

52 MFB, *Submission 4*, Attachments 4-6, *Findings into Death Without Inquest*, COR 2008/0041 – 0043, p. 12.

53 MFB, *Submission 4*, Attachments 4-6, *Findings into Death Without Inquest*, COR 2008/0041 – 0043, p. 13.

54 MFB, *Submission 4*, Attachments 4-6, *Findings into Death Without Inquest*, COR 2008/0041 – 0043, p. 14.

55 MFB, *Submission 4*, Attachments 4-6, *Findings into Death Without Inquest*, COR 2008/0041 – 0043, p. 24.

- information be disseminated to landlords, real estate agents and property managers as to the installation and maintenance of smoke alarms.[57]

3.47 These findings, and the other fatal fires discussed in this report, demonstrate how serious the consequences can be when no person connected with a dwelling knows whether smoke alarms have been installed in a property, or has responsibility for maintaining them.

3.48 In addition to the proposal to amend the NCC, the committee believes it is vital to educate the public about the differences between smoke alarm technologies, the benefits associated with the installation of smoke alarms with different smoke detection properties in different locations, and the importance of regular smoke alarm testing and maintenance. The committee is also of the view that it is preferable to improve rates of installation and maintenance of smoke alarms in residential properties via public education as opposed to enforcement, which is likely to be a time-consuming and costly undertaking for state and territory governments.

3.49 The committee recommends that Australian governments develop and implement, in consultation with fire and emergency services, a package of measures to educate Australians about the importance of smoke alarms and the rules applying to smoke alarms in residential properties in each jurisdiction. The package should be promoted widely and include a website with clear information available in a variety of languages as well as resources to be used by stakeholders such as real estate agents, community organisations and fire and emergency services when engaging with members of the public.

Recommendation 6

3.50 The committee recommends that the Commonwealth, state and territory governments develop and implement a package of measures, including but not limited to a website and resources for key stakeholders, to educate Australians about:

- **different types of smoke alarms;**
- **the benefits associated with installing smoke alarms with different smoke detection properties in particular locations within a property;**
- **the smoke alarm requirements that apply to residential properties in each jurisdiction;**
- **the importance of regular smoke alarm testing and maintenance;**
- **who has responsibility for installing and maintaining smoke alarms, and advice about how to do this or seek assistance to do so; and**

56 MFB, *Submission 4*, Attachments 4-6, *Findings into Death Without Inquest*, COR 2008/0041 – 0043, p. 24.

57 MFB, *Submission 4*, Attachments 4-6, *Findings into Death Without Inquest*, COR 2008/0041 – 0043, p. 25.

- **the triggers for compliance checking of smoke alarms (for example at time of sale, tenancy or hire).**

3.51 In the event that Australian governments are not amenable to amending the NCC, an alternative could be for Australian governments to subsidise (or fund completely) the installation of smoke alarms in residential dwellings across Australia, with a particular focus on vulnerable populations, and including advice with regards to smoke alarm placement. A nation-wide smoke alarm installation scheme would be a significant undertaking. It would require careful planning, consultation with fire authorities and experts, and the cooperation of the Commonwealth, state and territory governments in order to succeed. It would also be prudent to consult with public and community housing providers, and the real estate agency industry, in terms of rolling out the scheme in rental properties.

3.52 Ideally, such a scheme would ensure occupants have early warning of smoke, giving them more time to escape and contact emergency services, and thereby reducing the risk of injury and death, as well as damage to their home and other possessions. It would also be of significant value to the community as a whole. As the committee heard, it is the most vulnerable members of the community who are currently dying in house fires, a worrying trend that needs to be addressed.

Recommendation 7

3.53 In the event Australian governments are unwilling to amend the National Construction Code and apply it to all building stock irrespective of classification and age, the committee recommends that they consider implementing a nation-wide smoke alarm household installation scheme that includes consultation with:

- **fire and emergency services, housing providers and the real estate agency industry; and**
- **individuals and organisations working with vulnerable members of the community.**

Senator Glenn Lazarus
Chair