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Senator Lazarus
Legal and Constitutional Affairs References Committee
C/- Ms Sophie Dunstone
Committee Secretary

(sent via email)

Dear Senator Lazarus

Thank you for the opportunity to provide comment in regards to the Legal and Constitutional Affairs References Committee inquiry into the use of smoke alarms to prevent smoke and fire related deaths.

The following submission has been developed in collaboration between the South Australian Fire Services, consisting of the South Australian Metropolitan Fire Service (MFS) and the South Australian Country Fire Service (CFS).

The CFS and MFS are pleased to provide the following information in regards to the issues identified by the by the Committee:

a. The incidence of smoke and fire related injuries and deaths and associated damage to property

The table below contains information compiled from MFS Annual Reports. The data is populated from the Australian Incident Reporting System (AIRS).

MFS Annual Report Year	Number of Structure Fires	Fire Fatalities	Fire Injuries	Death in Structures with Smoke Alarms	Deaths in structures without Smoke Alarms	Deaths in structures with Smoke Alarms Inoperable	Deaths in Structures with Smoke Alarms Undeterminable
2007-8	1338	9	6	6	1	1	2
2008-9	1167	7	19	4	0	0	1
2009-10	1105	13	18	3	1	1	2
2010-11	1124	11	20	2	2	1	1
2011-12	1171	7	19	2	2	1	1
2012-13	1203	10	23	1	1	4	0
2013-14	1121	5	20	1	2	2	0

Note: "Fire Fatalities" – are all fire related deaths within the State of South Australia



It is noted that the Committee is specifically requesting information in regards to “damage to property”. It is our position that this question is fundamentally flawed as it provides no valid assessment of the effectiveness of fire prevention activities, such as the installation of smoke alarms, in reducing fire related injuries and deaths and property damage.

b. The immediate and long term effects of such injuries and deaths

The fire services in South Australia do not collate data in regards to immediate and long term effects of smoke and fire related injuries and deaths.

c. How the use, type and installation set-ups of smoke alarms could affect such injuries and deaths

Smoke obscures vision and causes intense irritation to the eyes. This, combined with the effects of the poisons contained in smoke, leading to disorientation, impaired judgement and panic, reducing the victim's ability to find an exit.

Most fire-related deaths result from the inhalation of toxic fire gases rather than from direct contact with flame or exposure to heat.

Considering that the majority of the fire deaths occur in dwellings while the occupants are asleep, it is recommended that smoke alarms are installed in bedrooms with sufficient frequency and sound level, with a minimum of 75dB(A) at the bedhead to awake sleeping occupants in the event of an alarm. The alarms need to be interconnected with other smoke alarms installed in that dwelling with the aim of waking sleeping occupants if there is a fire in another part of that dwelling. We also recommend the use of photoelectric type smoke alarms in dwellings as research/studies by the Australasian Fire and Emergency Services Authorities Council (AFAC) indicates that photoelectric smoke alarms are generally more responsive to fires that would be expected to occur dwellings.

People who have a hearing impairment may have difficulty in hearing conventional smoke alarms and therefore specialised smoke alarms are recommended to be installed in such dwellings. At present there is an ‘Australian Standard (AS1603.17-2011)’ which applies to smoke alarms that details the requirements for warning equipment for people with hearing impairment; however the standard is not currently mandatory.

We also note that the maintenance of smoke alarms is the responsibility of the building owner (landlord if rented) as smoke alarms can become ineffective if not maintained in good working condition.

Types of Smoke Alarms

Ionisation Smoke Alarms

Ionisation Smoke Alarms detect small diameter smoke particles, the invisible products of combustion, and are most effective in the case of flaming fires. They are not suitable for locations affected by cooking, combustion heating appliances or open fires.

Photo-Electric Smoke Alarms

Photo-Electric Smoke Alarms detect larger smoke particles, the visible products of combustion, and are most effective in the case of smouldering fires. They are suitable for installation near kitchens or in areas containing combustion heaters or open fires. They are not suitable for installation near bathrooms or near areas where steam is generated.

Best Protection

Recent research indicates that Photo-Electric alarms provide the best detection across a range of fires.

For homes which already have Ionisation Alarms, we recommend that they be supplemented with additional, interconnected photo-electric alarms. When existing Ionisation Alarms reach 10 years of age, they should be replaced with Photo-Electric alarms.

We recommend that the best protection is provided by Photo-Electric smoke alarms which are hard-wired to the 240 volt power supply and interconnected to give the earliest warning possible.

Interconnectable Alarms

Both the ionisation and the photo-electric types of smoke alarm are available as interconnectable alarms. Where two or more alarms are installed, it is recommended that they be interconnected.

The interconnection of alarms ensures that, if one alarm detects smoke, all interconnected alarms will activate to sound the warning.

Quality Assurance

All smoke alarms have a recommended service life of 10 years under normal operating conditions after which time they should be replaced.

Fire Detection Systems

In a large domestic dwelling, it is advantageous to have the domestic fire alarms interfaced to a Residential Fire Alarm Indicator Panel. The occupants, and the Fire Service on their arrival, will then know exactly where the fire has been detected in the house.

Residential Fire Alarm Indicator Panels are also an advantage in lodging houses, blocks of flats or apartments.

Note: Residential alarms may only be used where the Building Code of Australia does not call for an Australian Standard AS 1670 system.

Smoke Alarms for Impaired Persons

For those who are deaf or hard of hearing, there are smoke alarm systems available that incorporate strobe lights and vibrating elements in addition to the audible alert signal.

If a person is dependent on others for movement (e.g. paraplegic), a smoke alarm system may be interfaced with equipment that will send a pre-recorded message or signal to the service provider so that the fire service and a designated carer can be immediately notified to respond.

d. What smoke alarms are in use in owner-occupied and rented dwellings and the installation set-ups

Depending on the age of the property, both ionisation and photo-electric types of smoke alarms may be in use. Regulation 76B of the Regulations under the *Development Act, 1993* requires that smoke alarms complying with Australian Standard AS 3786 be fitted to all "Class 1 and 2 buildings." Compliance with AS 3786 will be shown on the smoke alarm packaging.

"Class 1 and 2 buildings" means:

- Any single dwelling including detached houses or attached houses such as row houses, terrace houses, town houses, villa units, etc.
- A boarding house, guest house, hostel or the like with a total floor area not exceeding 300m² and in which not more than 12 persons would ordinarily be resident.
- Note: Larger buildings of these types will require a commercial type fire alarm system.
- Any building containing 2 or more sole-occupancy units each being a separate dwelling (i.e. flats, motel units, apartments and the like) where the building is not required to be fitted with a commercial type fire alarm system.

In South Australia, homes built since 1 January 1995 must be equipped with hard-wired smoke alarms. All other homes must be equipped with at least 9 volt battery powered smoke alarms. When a house with 9 volt battery powered smoke alarms is sold the new owner has six months to install alarms which are hard-wired to the 240 volt power supply or powered by 10 year life, non-replaceable, non-removable batteries. Penalties apply for non-compliance.

e. How the provisions of the Australian Building Code relating to smoke alarm type, installation and use can be improved

In South Australia, the provisions of the *Development Act 1993* are a useful adjunct to the provisions of the Building Code.

Provisions of the BCA should ensure that every dwelling is assessed individually to ensure that in the event of a fire, occupants of every bedroom in the dwelling will receive an audible warning so that they may safely evacuate.

Some general considerations:

- The smoke alarms should be positioned to protect the escape routes from the bedrooms. In a passage way the alarm should be between the living area and the first bedroom.
- If bedrooms are located in separate parts of the dwelling the escape route from each sleeping area should be protected by at least one smoke alarm.
- If the dwelling is two-or multi-storeyed, in addition to the above considerations, smoke alarms should be located on each level in the vicinity of the stairs to ensure early warning of fire outbreak on a level not currently occupied.
- Where more than one smoke alarm is required, it is strongly recommended that they be interconnected. Interconnected alarms sound simultaneously when one of them senses smoke thus warning occupants in all parts of the dwelling.

People who have a hearing impairment may have difficulty in hearing conventional smoke alarms and therefore specialised smoke alarms are recommended to be installed in such dwellings. At present there is an 'Australian Standard (AS1603.17-2011)' which applies to smoke alarms that details the requirements for warning equipment for people with hearing impairment; however the standard is not currently mandatory.

We also note that the maintenance of smoke alarms is the responsibility of the building owner (landlord if rented) as smoke alarms can become ineffective if not maintained in good working condition. The requirement for mandatory maintenance could be considered in any review of the BCA.

f. Whether there are any other legislative or regulatory measures which would minimise such injuries and deaths

In South Australia, legislation is in place to make smoke alarms compulsory for all residential buildings.

Home owners are required, by Regulation 76B under the South Australian *Development Act 1993*, to install battery powered or hard-wired (240 volt mains powered) smoke alarms* in accordance with the requirements of AS 3786 and interconnected where there is more than one smoke alarm installed. For existing buildings however (prior to 1st January 1995), the regulation states that smoke alarms may be powered by 10 year life, non-replaceable, non-removable, permanently connected batteries or by mains source electricity. We recommend that all smoke alarms shall be 240V mains powered smoke alarms.

* Houses built since 1 January 1995 must be equipped with hard-wired smoke alarms. All other houses must be equipped with at least 9 volt battery powered smoke alarms. When a house with 9 volt battery powered smoke alarms is sold the new owner has six months to install alarms which are hard-wired to the 240 volt power supply or powered by 10 year life, non-replaceable, non-removable batteries. Penalties apply for non-compliance.

Change of Ownership on or after 1st February 1998

From the 1st February 1998, if a building covered by Regulation 76B of the South Australian *Development Act 1993* undergoes a change of ownership, the new owner must, within 6 months of title transfer, install smoke alarms either:

- hard wired to the 240 volt household power supply (unless the dwelling is not connected to such a supply); or
- powered by 10 year life, non-replaceable, non-removable, permanently connected batteries.

Yours faithfully

G. Crossman, AFSM MBA
CHIEF OFFICER and CHIEF EXECUTIVE