

31/08/2015

The Senate Legal & Constitutional Affairs Reference Committee.

Re: Use of fire alarms to prevent smoke & fire related deaths.

I am writing from the perspective of a person within the fire Protection Industry, whom has a greater technical knowledge & experience than most – see attached Resume.

The submissions from the Fire Brigades have strongly made the case for requiring Smoke Alarms & I will not re-state their comments.

There are some issues with the existing standards & other code requirements that cause the overall low credibility of smoke alarms in the wider community. If people don't trust smoke alarms, they are less likely to install them (irrespective of legal requirements) & more likely to tamper with them.

#### Smoke Alarm sensitivity.

The smoke alarm standard (AS3786) clause 3.2 (sensitivity) is too wide in sensitivity tolerances, being 3%/m to 20%/m average sensitivity & 3%/m to 30%/m individual device sensitivity. At 3%/m, cooking fumes, aerosol sprays & other non-fire sources will activate both photoelectric or ionisation devices. At 30%/m, visibility has reduced to 3.3 metres & it is a reasonable probability that the occupants are already dead.

Sensitivity measurements are based on the obscuration of light by smoke over a one metre distance & is expressed as percent obscuration per metre.

To put these numbers in to context, a commercial quality addressable smoke detector as used with a large Fire Alarm Panel has a programmable sensitivity & the default is between 6.5%/m & 8%/m (across all manufacturers), with the upper & lower limits of 3%/m (considered high sensitivity & only used in clean areas such as computer rooms) & 12%/m which is used in dirtier environments, such as carparks.

Regular false alarming due to high sensitivity results in some people removing their smoke alarm or sealing the device with duct tape, rubber gloves etc. which has defeated the purpose of having smoke alarms. I have personally seen this, as have some of my technicians performing annual testing.

It is my opinion that clause 3.2 of AS3786 needs to be changed so the tolerance range is 6%/m to 12%/m.

#### Waking sleeping occupants.

Clause 3.5 of AS3786 (sound pressure level) specifies 85dB at 3 metres. While this is quite loud, it may not wake all people who are asleep, especially children & adolescents. Canadian research in the 1990s showed that children/adolescents are not woken by loud noise & respond to better light.

The actual sound level at the pillow may be significantly lower if the bedroom door is closed, as the location of smoke alarms is specified in the BCA (Building Code of Australia) as outside the bedrooms & in the egress path.

It is my opinion that interconnected smoke alarms and/or sounders should be installed in bedrooms & some form of lighting (possibly an LED) be included in the smoke alarm. Adding

lighting would also help in evacuating if there is no normal lighting due to power failure, which can result from a fire.

Feel free to contact myself for any further questions or technical comment, including comment on submissions from others.

Yours sincerely,

John Taylor.