



25<sup>th</sup> May, 2006

New Zealand Fire Service  
Command Headquarters  
PO Box 2133, Wellington  
NEW ZEALAND

Attention Dr Paula Beever

## **New Zealand Fire Service – ‘Saving Face or Saving Lives?’**

Dear Dr Beever

This letter is in response to the New Zealand Fire Service position on ionisation versus photoelectric smoke alarm technology.

I have read with concern the Tuesday May 9, 2006 media release from the New Zealand Fire Service located on the Fire Services web site at [www.fire.org.nz/news/media/2006/2006-05-09-1.htm](http://www.fire.org.nz/news/media/2006/2006-05-09-1.htm) (copied below). I am informed the media release was in response to a radio interview with David Calvert the Executive Director of the New Zealand Safety Council where he was attempting to get important fire safety information to the public in conjunction with the International Crusade against Fire Deaths.

I have long held the view that persons in positions of significant public influence appear to underestimate the ‘weight’ of their comments. In so doing they often neglect their public responsibilities and duty of care obligations to provide proper information to the public to allow the public to make informed decisions on cost and safety.

The statements that you have been quoted as making in the New Zealand Fire Service media release are endorsed with: ***“Dr Beever is a world recognised authority in fire engineering and runs the Fire Service’s risk management arm”***. This endorsement is clearly provided to add ‘weight’ to the credibility of your public statements. As a world recognised authority in fire engineering responsible for the Fire Services risk management arm, I am curious as to the information, knowledge or experience on which you relied to make the misleading public statements relating to the relative performance of smoke detection technologies in fires in residential structures.

The New Zealand Fire Service media release has effectively undermined the public confidence in important safety information on what are the now widely known serious limitations of ionisation smoke alarms to detect the most statistically lethal fires in residential structures. These lethal fires occur at night while occupants are sleeping. In failing to provide appropriate information to the public, you have ignored statistical information available from comprehensive international data which paints a very different picture to that of your media release. I am concerned that some may argue the mix of truthful and misleading statements and the omission of critical safety information regarding the performance of smoke alarms within the New Zealand Fire Service press release may constitute professional negligence.

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In the press release it is claimed that ... **"Smoke alarms do save lives. All of them give people sufficient warning time to get everyone out ..."**. The initial truthful statement, **"Smoke alarms do save lives."** is followed with **"....All of them give people sufficient warning time to get everyone out..."**. This second statement is totally untrue, lacks integrity and demonstrates a lack of technical knowledge on the performance limitations and application of detection technology that a 'world recognised authority in fire engineering' ought to know. More importantly the statement misrepresents the truth to the New Zealand public.

Additionally the claim... **"most fires in this country begin in the kitchen; hot flaming fires well up to the ionisation smoke alarms most commonly used in this country...."**, is inconsistent with the New Zealand Fire Service's Emergency Incident Statistics 2003-2004 EIS book which states 32.5% of fires started in the kitchen and 67.5% started elsewhere in the home. However, what is misleading about this statement is the inference that the flaming kitchen fire is the most dangerous. Even though the kitchen is the most common room in which fires start, **kitchen fires are not statistically the fires responsible for most residential fire fatalities**. Kitchen fires typically occur during waking hours, are caused by awake occupants and are detected and contained by an occupant often prior to an alarm sounding. In nearly all cases where the occupant is awake there is sufficient time to escape with or without smoke alarm activation. It is difficult to understand the circumstances where an occupant would cause a flaming kitchen fire and then need a smoke alarm to wake him in time for him to escape, except when for example the occupant is intoxicated and may not wake in any case. Your endorsement of the ionisation alarm in this type of flaming kitchen fire is interesting when there is ample evidence that establishes there is little appreciable difference in the performance of ionisation and photoelectric smoke alarms in residential flaming fires.

What is particularly misleading in the media release is, after defending the performance of ionisation smoke alarms in flaming kitchen fires, there is a complete omission of advice in relation to the appropriate detection of fires that statistically kill most people in residential structures. These fatal fires that represent the highest statistical risk to occupants are those that occur at night between 8-00pm and 8-00am while occupants are asleep and these fires typically develop from a smouldering stage. This information is available from the New Zealand Fire Service's own statistical data. There is an overwhelming body of international evidence of the known limitations of ionisation smoke alarms to detect slow smouldering fires in sufficient time to allow sleeping occupants to safely escape. Ionisation smoke alarms are particularly ineffective when the smouldering material is of a synthetic nature such as a cigarette on a couch or bed, or an electrical fault in an appliance or cabling, or where the fire starts some distance from the ionisation smoke alarm. Evidence shows that photoelectric smoke alarms will activate 20 to 60 **minutes BEFORE** an ionization smoke alarm in slow smouldering fires. The UL and Australian Standards compliance test results for ionisation smoke alarms are damning enough to those who have investigated the test data. The New Zealand Fire Service's failure to warn the public of the known limitations of ionisation smoke alarms to detect slow smouldering fires is in my view a serious error of judgement. In failing to provide any warning, the New Zealand Fire Service has denied the public critical information on which they would rely to make a decision on cost and safety.

Litigation taken in April 2006 in New York where punitive damages were awarded against the world's largest smoke alarm manufacturer, demonstrates the risks for those who promote the use of ionisation smoke alarms in residential environments. Should someone relying on the NZ Fire Service's media release advice ( **"All of them (smoke alarms) give people sufficient warning time to get everyone out ..."**), lose a family member in a residential fire that occurred at night where an installed ionisation smoke alarm failed to give a timely warning, the NZ Fire Service could find itself exposed to litigious action and at the very least suffer significant credibility damage, neither of which is in the best interest of the New Zealand Fire Service.

The failure of the New Zealand Fire Service to provide proper advice on smoke alarms appears entrenched within the Fire Service.

In the Sunday Star Times newspaper on the 10<sup>th</sup> of August 2005, Gary Talbot a New Zealand Fire Service Senior Fire Safety Integration Officer challenged the New Zealand Safety Councils stand with the 'International Crusade Against Fire Death's' campaign. The Sunday Star article reported that the New Zealand Fire Service was worried the Crusade's **"campaign against household smoke detectors will confuse the public."**

What appears to be an entrenched attitude in the New Zealand Fire Service is again reinforced in an article by Dave Courtney published in the Sunday Star Times on the 17<sup>th</sup> of August 2005. In the article, the New Zealand Safety Council claimed ionisation smoke alarms cannot sense slow smouldering fires, and should be replaced with photoelectric smoke alarms. The article alleges Gary Talbot the Fire Service fire safety integration officer responded with **“We recommend people use them and we do not intend to move away from that advice,”** The article further alleges Mr Talbot said the New Zealand Safety Council Campaign would confuse people and could lead them to choose no smoke alarm at all.

Whilst I accept the media can sometimes manipulate responses for maximum “news effect” there appears to be a worrying trend in the New Zealand Fire Service attitude in this regard. Where can there possibly be any confusion in a simple comparison between types of smoke alarms if the public are provided with the correct information as follows:

#### **Ionisation Smoke Alarm**

- Prone to nuisance alarms from cooking fumes (statistically likely to be disconnected by the consumer).
- Contains radio active material (Americium 241).
- Responds best when fires develop to the hot flaming stage (only if it is close to the fire source and has not been disabled due to nuisance alarms).
- Does not detect visible smoke, detects only sub micron particles of combustion.
- Unlikely to detect smoke from fires of the type which are statistically responsible for most residential fire deaths in time to safely escape (i.e. slow smouldering fire that develops while occupants sleep).
- Affordable.

#### **Photoelectric Smoke Alarm**

- Not prone to nuisance alarms from cooking fumes (statistically unlikely to be disconnected by the consumer).
- Does not contain radio active material.
- Responds adequately to hot flaming fires in residential structures (even if some distance from the fire source).
- Detects visible smoke
- Proven to detect smoke from fires of the type which are statistically responsible for most residential fire deaths providing sufficient time to safely escape (i.e. slow smouldering fire that develops while occupants sleep).
- Affordable.

With this information the public can choose. Is not the choice for the New Zealand public going to be obvious and the only confusion likely to be their questions as to why the New Zealand Fire Service are promoting ionisation smoke alarms, nothing to do with confusing technicalities? In my view, the New Zealand Fire Service appear to be responsible for the confusion by taking a stand against those who are attempting to warn the public of the known limitations of ionisation smoke alarms. What logical or plausible reason could there be for the New Zealand Fire Service to deny the public the knowledge of the known limitations of ionisation smoke alarms?

I am a New Zealander by birth although residing in Australia for 30 years, most of my family lives in New Zealand and I do not believe the average New Zealander is as prone to confusion as the New Zealand Fire Service contends. Any confusion that may exist is the confusion voiced so eloquently by Susan Wood, TV New Zealand ‘Close Up’ presenter in the January 2005 Close Up story about the International Fire Crusade’s campaign. Ms Wood stated **“...everyone in the studio tonight just sat there with their mouths sort of open going, oh my goodness we had no idea there were two types (of smoke alarms)...”** and she asked the question of Murray Binning the Auckland Fire safety Chief **“Why haven’t we been told....?”** Murray Binning responded **“different horses for different courses.....once you get into the technicalities of the various types and their operating principles people can easily become confused”**. Just how ignorant does the NZ Fire Service assume the NZ public are when the public make much more complex decisions on safety features in family cars.

To add further to the misinformation on smoke alarms, the New Zealand Fire Services web site states at: [www.fire.org.nz/home\\_kids/tips/smokealarm.htm](http://www.fire.org.nz/home_kids/tips/smokealarm.htm)

**“How do they work?”**

Smoke alarms detect smoke before you can even see or smell it.”

This was the marketing information of the ionisation alarm manufacturers back in the 1960s and 70s and has subsequently been proven as misleading. No responsible smoke alarm manufacturer today has this statement on any advertising material, yet the New Zealand Fire Service maintains this misinformation on their web site. The problem with the statement is the public gain the perception that all smoke alarms will activate before you can see or smell a fire, so they expect that before their house fills with smoke from a smouldering fire, the smoke alarm will activate and they think this because the ionisation smoke alarm activates when they cook toast. Today fire industry professionals know ionisation smoke alarms have serious limitations in detecting slow smouldering fires yet notoriously nuisance alarm at cooking fumes.

The fundamental performance expectation in legislation which requires smoke alarms is that the smoke alarms must provide warning to **sleeping** occupants of degrading tenability in developing fires **in sufficient time** for them to wake and safely escape before the exit paths become untenable. Occupants who are awake require very little time to escape from a fire compared to sleeping occupants. World wide research now shows that there is typically less than 3 minutes to untenability once a fire has advanced from the smouldering stage to the flaming stage in modern residential structures. Detecting a fire at the flaming stage (which is what ionisation alarms do best but only if they are close enough to the fire source and have not been disabled due to their documented and statistically unacceptable high false alarm rate), is typically too late to provide enough time for sleeping occupants to safely escape. Therefore, it is imperative that fires are detected at the smouldering phase which can be effectively achieved with photoelectric smoke alarms. The average person buys a smoke alarm in the genuine belief that before their house fills with smoke from a smouldering fire they will be given sufficient warning to safely escape; **regrettably this is absolutely not what will happen if they rely on an ionisation smoke alarm.**

In the New Zealand Fire Service media release the analogy is drawn “.....**smoke alarms which are, at the end of the day, the ambulance at the bottom of the cliff.**” This statement is totally unacceptable for any fire service to make. The whole design intent of the application of appropriate smoke detection technology is to provide warning early enough to allow people to safely escape, preventing injury from the consequences of fire. I would agree that if you relied on ionisation smoke alarms to save you from a developing fire that occurred while you were sleeping; an ambulance after the cleanup would be as effective as an ambulance at the bottom of the cliff, too late for the victim. In comparison if the public relied on photoelectric smoke alarms under the same circumstances, world wide test results consistently demonstrate they most probably would have sufficient warning to find their way to safety before the fire developed to the untenable stage.

I take further issue with the statement: **“There are three causes of fires - men, women and children”**. Why blame “men, women and children” when fires often start in faulty electrical equipment (excluding overloaded circuits which are caused by people) such as TVs, computers, VCRs, refrigerators, heating appliances and electric blankets at night when occupants are sleeping soundly with the false confidence that their (ionisation) smoke alarm will wake them in time to get out because the New Zealand Fire Service said in a media release **“All of them (smoke alarms) give people sufficient warning time to get everyone out ...”**? When innocent people die because their ionisation smoke alarm fails to give a timely warning, is it the fault of the “men women and children” or is it the fault of those who continue to sell and promote the ionisation smoke alarm without providing adequate warning to the public of its known limitations? That question was recently answered by the jury in the April 2006 landmark US court case, (Hackert v. First Alert Inc. and BRK Brands Inc.) which handed down compensatory **and punitive damages** against the smoke alarm manufacturer.

There are many more fire safety issues the New Zealand Fire Safety Council, the International Crusade Against Fire Deaths and others (myself included) are attempting to get to the public. These are not covered in this letter; they include but are not limited to: numbers and location of smoke alarms, heat alarms, alarm interconnectivity, residential sprinkler systems and public education. In 1980 the International Association of Fire Chiefs in their Residential Smoke Alarm Report stated **“The primary smoke detectors should be located in hallways, bedrooms, stairways, living rooms and other occupied areas. A smoke detector or heat detector then should be placed in every other room of the house, including closets, attics, kitchens, garages and basements. Each and every room! Anything less is not complete protection and fire chiefs must recommend complete protection”**. The public have been misled in relation to the education needed to properly protect their families from fires for thirty years. I have public educational material available now regarding the proper level of residential fire protection to fully protect families. When the public are given access to education and quality fire protection products, a new era in fire safety will commence which will result in the prevention of thousands of needless fire deaths and maimings every year.

I encourage the New Zealand Fire Service, as a matter of urgency, to make themselves aware of readily available engineering and scientific test data, review their position on smoke alarm technology and reissue the New Zealand Fire Service Position Statement in a clear, accurate and responsible manner so that the New Zealand public become aware of the recognised, documented and well established serious performance limitations of the ionisation smoke alarm. The New Zealand Fire Service has a duty of care to do so.

**This is not about saving face; it is all about saving lives.**

Please respond.

Yours faithfully,

**Mecelec Design and Management Pty. Ltd.**



David P. Isaac  
*Director*

Member Australian Standards Committee FP-002 Fire Detection and Alarms Systems  
Member Fire Protection Association Australia (FPAA) Technical Committee TC/2  
Member Audio Engineering Society, Fire Protection Consultant, 35 Years Industry experience

cc

Mike Hall, National Commander, New Zealand Fire Service  
David Calvert, Executive Director, The New Zealand Safety Council  
Janet Wilson, Executive Producer, TV New Zealand Close Up program.  
Carole Hall, Executive Producer, 'A Current Affair' Channel Nine Australia.  
AFAC  
Ross Hodge, Executive Director, FPA Australia  
FPA New Zealand

**May 9, 2006 Media Release Page 6**

## **Subject: May 9, 2006. Media Release. New Zealand Fire Service position on ionisation vs photoelectric smoke alarm debate**

Media release from Dr Paula Beever, National Director Fire Risk Management, in response to a radio item this morning:

May 9, 2006

Working smoke alarms better than no smoke alarms, says Fire Service

The debate has been raised this week about what types of smoke alarms should be installed in homes.

The Fire Service says people should not lose faith in smoke alarms. Working smoke alarms are far better than no smoke alarms at all.

"In most fatal fires in New Zealand no smoke alarms were installed, and most fires in this country begin in the kitchen; hot flaming fires well up to the ionisation smoke alarms most commonly used in this country," says fire engineer Dr Paula Beever.

Dr Beever is a world recognised authority in fire engineering and runs the Fire Service's risk management arm.

She says that each year since 2002, 1,000 house fires have been successfully detected by smoke alarms, and two-thirds of these fires controlled without any damage to the house.

"Smoke alarms do save lives. All of them give people sufficient warning time to get everyone out - that is why we always advise people to get smoke alarms installed and practice your escape plans".

She says a consortium of Australasian fire authorities, including New Zealand, has commissioned research into smoke alarms and the results are due to be released shortly.

"We will adopt the findings as soon as they are available"

Paula says fire safety is not just about smoke alarms which are, at the end of the day, the ambulance at the bottom of the cliff.

"We are always urging people to stop fires happening in the first place. There are three causes of fires - men, women and children. For instance one of our main messages is "keep looking while you're cooking".

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