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Silent Alarms, Deadly Nights

By Skip Walker, MCI ACI
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Nearly 95% of California families are living on the brink of a tragedy. And this isn't what you are probably thinking. I am not talking about an earthquake. It is the smoke alarms that most of us depend on in a fire. Like most, I always believed that smoke alarms were pretty much all the same. After all, every smoke alarm sold is required to be tested and approved. The smoke alarms most of us have at home are *either Ionization* or *Photoelectric* type alarms. The reality is that all smoke alarms are not the same. In real-world fires, these two types of alarms will react very differently. In this case – different is not good. Knowing the difference could very well save your life.

Back in the 1970's, smoke alarms were largely unknown. Back then, the residential fire death rate was about 7 to 8 fatalities per 1,000 US home fires. Between the 70's and now, we have installed hundreds of millions of smoke alarms in US homes. Yet today, your chances of dying in a fire still hover around 7 or 8 deaths per 1,000 home fires. Clearly, something is terribly wrong here.

"I estimate that at least 10,000-15,000 people have died unnecessarily in smoldering house fires since 1990 because they relied on ionization detectors"
Jay Fleming, Boston Deputy Fire Chief

The smoke alarm marketers tell us that the alarms are the same and more recently that we should have both types. It is true that an ionization alarm responds marginally faster to an open or "fast-flame" fires than a photoelectric smoke alarm. On average, ionization alarms will react about 30 to 90 seconds faster to this type of fire. However, nearly 100% of residential fire fatalities are from smoke inhalation and not from the actual fire. Most deadly fires occur at night while you sleep. On average, ionization alarms respond about ***30 to 90 minutes*** slower to smoldering fires than a photoelectric alarm. In these fatal fires, a photoelectric alarm will alert occupants in time to allow a safe exit about 96% of the time. Ionization alarms will generally give sufficient warning less than 40% of the time, meaning 60% of the time someone may die.

The problem with ionization alarms isn't just the their slow response times. Ionization alarms nuisance trip when you cook, shower, etc. People become frustrated and intentionally disable them, leaving their family completely unprotected. About 2/3's of all residential fire deaths occur in homes that are unprotected. Ionization alarms account for over 85% of disabled alarms. Most of the remaining fire deaths occur in homes where an alarm sounds, but it sounds too late for the occupants to escape.

For Ohio fathers Dean Dennis and Doug Turnbull, the battle over ionization alarms is very personal. Both lost daughters in separate Ohio college off-campus housing fires. Those fires claimed a total of eight lives. There were around ***twenty*** smoke alarms between those two fatal fires. Some alarms had no batteries, ***none*** of the functional alarms responded, ***all*** were ionization alarms. Dean and Doug founded ***Fathers for Fire Safety*** as a way to educate the public and fire service about this critical issue. This group works closely with the World Fire Safety Foundation, an organization that has been instrumental in educating the fire service community and general public about this critical issue.

There is significant university and government research – some going back to the mid-1970's - clearly showing that ionization alarms are slow to react in smoldering fires. It has taken decades, but there is finally a growing public awareness of this issue. Recently, the International Association of Firefighters (IAFF) took a stand and now recommends that only photoelectric smoke alarms be installed. In July, 2010, the City of Albany, California became the first city in California to require photoelectric smoke alarms in new construction and remodels. In late 2010, the cities of Palo Alto and Orange enacted ordinances requiring photoelectric technology alarms. In January 2011, the City of Sebastopol enacted an ordinance requiring photoelectric technology. Both Vermont and Massachusetts now require photoelectric technology smoke alarms in residential construction. Hopefully, California will step up and join Vermont and Massachusetts in requiring photoelectric technology alarms at the state level.

Albany, CA Fire Chief Marc McGinn has called for, "*the immediate removal of the fraudulent, deadly, ionization so-called smoke alarms from all stores and homes before more people are needlessly maimed or killed."*

Which Ones Do I Have?

It is not always possible to know. In general, if the alarm has a "Hush" feature, it probably an ionization unit. If the label says anything about radioactive material, Americium-241 or the model number has an "I" in it - then it is probably an ionization alarm. If there is ***any*** doubt, there is a 95% chance the alarm is an ionization unit. To be safe, simply replace any unknown units with photoelectric alarms.

What About Combination Alarms?

There are combination photoelectric/ionization units available. These units have the same issues as ionization only detectors. In some cases – they may actually be worse. They will nuisance trip due to the ionization detector. Some manufacturers appear to have reduced the smoke sensitivity/response of combination units as a way to cut nuisance tripping. There are design issues with certain combination alarms that actually make them less effective than photoelectric only alarms. The International Association of Fire Fighters (IAFF) specifically recommends against installing combination alarms.

There are also combination photoelectric/carbon monoxide (CO) alarms. For safety reasons, smoke alarms should be replaced every 10 years. CO detectors should be replaced every 5 to 7 years. With combination units, you are either replacing the smoke alarm portion too soon or relying on a CO detector that is past its replacement date. Combo units are also more expensive. Separate units make more sense.

Every year, about 1,000 people die needlessly in residential fires and thousands more are seriously injured. It is critical that public awareness of this issue become the top priority for each of us. Photoelectric alarms provide the best protection in real-world fires that we have available today. And they cost only a few dollars more. This year, don't just replace your smoke alarm batteries – replace your alarms with photoelectric alarms and recommend that your families, friends, and neighbors all do the same!

About the author:

Skip Walker lives in the SF Bay Area and has performed over 2,900 property inspections since 2003. Skip is a Master CREIA Inspector (MCI), an ASHI Certified Inspector (ACI), an ICC Certified Residential Combination Building Inspector and a F.I.R.E. Certified Inspector. Skip is the past education chair for the Silicon Valley ASHI/CREIA Chapter, CREIA 2010-2011 State Secretary and the CREIA Region Three Director 2009-2011. He also holds a California Real Estate Appraisal Trainee License. Skip may be reached at (650) 873-4224 or by email at: HomeInspection@sanbrunocable.com.