WHY THE IONISATION 'SMOKE' DETECTOR REPRESENTS FALSE SECURITY

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Richard M Patton, FPE

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Latest Version At: www.FireCrusade.com/docs

NOTE: All Crusade documents have been 'Digitally Updated' for convenience and ease of reading. Formatting style has been standardized and the text in the digitized documents, in some cases, has had minor modifications. Original documents are on file and available upon request (see back page for more).

THE CRUSADE AGAINST FIRE DEATHS INC.

Richard M Patton
Crusade Founder
Fire Protection Engineer

Crusade Against Fire Deaths, Inc.

Fighting To Protect You And Your Family

Patton's 'Crusade Against Fire Deaths Inc'. started in 1976 when he sent 3,000 *'Smoke Alarm Fraud'* reports to Fire Chiefs and fire Engineers across the USA.

Patton's relentless 30 year fire industry Crusade was the inspiration behind the new documentary ***'Stop The Children Burning'*** (see back page for more).

For more information visit our web site at: www.FireCrusade.com

WHY THE IONIZATION TYPE 'SMOKE' DETECTOR REPRESENTS FALSE SECURITY

Fire loss statistics compiled by the U.S. Federal Emergency Management Agency reveal that the ionization device, which is now referred to as a "smoke" detector, has not been confirmed to operate more than 25 percent of the time when a fire occurs in a home. The data contained in the FEMA report is as follows:

"The U. S. Federal Emergency Management Agency has published a report entitled Fire In the United States, 1985 - 1994. On page 67 this report provides the following data relative to smoke detector performance within RESIDENTIAL buildings".

FIRES	
1. Present, Operated	24%
2. Present, Not Operated	15.4%
3. No Detector	30.2%
4. Unknown	34.4%
FIRES CAUSING DEATHS	
1. Present, Operated	12.8%
2. Present, Not Operated	13.3%
3. No Detector	40.3%
4. Unknown	33.7%

A small fire, promptly extinguished by the occupants of a home, is unlikely to be reported to the fire department. Hence, the fires that show up in the FEMA study tend to be serious ones requiring a response by the firefighters. Accordingly, since 90% or more of the homes contain smoke detectors, the fact that the device can not be confirmed to operate better than 25 percent of the time confirms a very serious performance problem.

Another startling fact revealed by the loss data, this time the statistics of the National Fire Protection Association (NFPA) during the years when the percentage of homes containing smoke detectors rose from less than 5% to about 80%, there was almost no reduction in fire deaths.

All ionization detectors operate on the same basic principal and all have the same 'holes' in their detection capabilities. While there are two types of smoke detectors (ionization and photoelectric) probably 90% of the smoke devices in homes are of the ionization type.

The conclusion that must be reached relative to the above data, plus other supporting data and fire tests, is shocking. It is:

WHEN A FIRE OCCURS IN A HOME 'PROTECTED' ONLY WITH IONIZATION-TYPE SMOKE DETECTORS THE PROBABILITY THAT THE DEVICE WILL FAIL TO WARN OF THAT FIRE MAY BE AS HIGH AS 75%

It is interesting that following the California Fire Chiefs tests of smoke detectors during a live fire test programs in Los Angeles, (which cost more than one million dollars), John Gerard, Fire Chief of Los Angeles, predicted that the device would experience a 50 percent to 80 percent failure rate. The loss data presently available suggests that he was accurate. However, the report of those tests, the Cal Chiefs Tests, were suppressed.

While the statistical data strongly suggests that there are extremely serious performance problems associated with all smoke detectors of the ionization type, statistics alone do not tell the full story. Scientific testing and an analysis of the operating principals of the device provide further evidence of the lack of reliability.

Americium 241, a radioactive material, contained in the device, fires out millions of alpha particles which knock electrons off gas atoms in the chamber of the device, thus producing positive and negatives ions. These ions, which are electrically charged, carry an electrical current across the detection chamber. When a large number of extremely minute particulates enter that chamber, the current flow is affected and an alarm sounds. The device could best be described as a 'particulate cloud' detector rather than a 'smoke' detector, as I will explain.

A 'PARTICULATE CLOUD' DETECTOR, NOT A 'SMOKE' DETECTOR

The device performs best when the average size of the particulates is below one micron in diameter. Such particles are so minute that they cannot be seen by the human eye. When the device was first introduced as a detector of fire during the 1960's, it was called a 'product of combustion' detector, NOT a 'smoke' detector. The reason was that smoke is considered to be a particulate cloud consisting of particles large enough to be visible. Hence, what we usually consider to be 'smoke' will obstruct the passage of light and seriously reduce visibility. One could say that 'smoke' is a visible cloud of relatively large particulates whereas, the 'products of combustion' that is detected by the ionization-type detector is 'invisible' smoke.

From a fire view point, the difference between 'products of combustion' and 'smoke' is easily demonstrated. A flame on a gas stove is emitting millions of particles as the gas burns. But these combustion particles are so small they cannot be seen. In a like manner, a flame on a candle is emitting particles but they also are so small that there is no visible 'smoke'. Pinch the wick, extinguish the flame and then, before the wick cools, visible smoke will be created.

In general, the ionization detector detects particulate clouds consisting of millions of particles per cubic inch, so small as to be invisible. The ionization detector does NOT detect particulate clouds that consist of particles so large as to be visible to the human eye. Thus, the so-called ionization-type smoke detector is a poor detector of real (visible) smoke. The transition from invisible smoke (detectable) to visible smoke (not detectable) is not a sharp one. That is, there can be conditions where there is visible smoke but also a sufficient number of very minute (invisible) particulates, with the result that the device will sound. However, when human life is at risk, and especially small children, I say it is not sufficient to gamble on a device that 'might' detect real and visible smoke.

75% FAILURE RATE

The data suggests that perhaps as high as 75 percent of time the device will FAIL to sound when there is a fire in a home. But, even if the failure rate is only 10 percent, would not that be excessive when life is at risk?

The lack of ability of the device to detect visible smoke on any consistent basis results in two types of fire conditions where the device will fail to warn. One is when the fire is of a smoldering type, such as a fire initiated by a lit cigarette in a sofa or on bedding. The smoldering fire is a low temperature, very slow burning fire. As a consequence, the type of smoke created usually will be incapable of causing the ionization detector to sound. A smoldering fire can slowly generate thick smoke and toxic gases for an hour, or two hours, and even longer. During the Dunes Tests, Series I, the average time for an ionization-type detector to respond to a smoldering fire exceeded one hour. Even more worrisome, usually the device sounded only after the fire was converting from smoldering to flaming, or had already become a flaming fire. Obviously, when a fire smolders for an hour or more, releasing smoke and toxic gases, with no alarm sounding, and then suddenly changes to a fast growing flaming fire, the non-alerted occupants can be in serious trouble.

'FLAMING' FIRE FAILURE

The second fire condition that can produce fire deaths and injuries with the ionization detector failing to warn is a flaming fire where the detector is not very close to the fire. A flaming fire tends to produce the 'invisible smoke', perhaps better termed as 'products of combustion' which is capable of causing the device to sound. However, when those extremely small combustion particles rise up, hit the ceiling and begin to flow in all directions, including toward the detector, they cool on the way and 'agglomerate'. That is, they bind together much like moisture particles form rain drops as they cool. They grow large and less numerous on the way to the detector and when finally reaching the device, the 'smoke' may not be of the 'right type' to make it sound.

What occurs in this case is that a small flaming fire grows to become a large flaming fire prior to the device producing a warning. By the time it sounds, conditions may already be deadly along the exit path.

WHY THE IONISATION 'SMOKE' DETECTOR REPRESENTS FALSE SECURITY

FALSE ALARMS

While the ionization detector is an unreliable detector of smoke, it is a frequent detector of invisible particulate clouds created by non-fire conditions. For example, hair spray, other vaporizing liquids, mist from a shower, burnt toast and overcooked roasts can all produce conditions that will cause the device to sound. These conditions cause a great many false alarms. The false alarming often causes a consumer to remove the battery. When the battery is removed, who is most responsible, the businessman who marketed a false alarm prone device or the consumer who cannot tolerate the false alarms?

A spray can dubbed a 'smoke detector tester' is sold. The implication is that if the detector is sprayed and sounds, it will be able to detect a fire. The public, however, is never advised that the detector, while able to detect the vaporized liquid particulate cloud, may not be able to detect real smoke from a real fire.

INSTALLATION LIMITATIONS

Because of its tendency to false alarm, the ionization device cannot be installed in certain areas of the home. Most notable of these prohibited areas is the kitchen because more fires initiate in the kitchen than in any other room in the home. When the device is located far enough away from the kitchen to not false alarm due to cooking, it is then far enough away that a real fire in the kitchen may not produce an early warning from the device. Other areas where the device is usually not installed include: garages, attics, furnace room, near fluorescent lights, near a shower, in dead air spaces and near air system outlets. When a home is analyzed relative to where the ionization detector should not be installed, due to false alarming or other reasons, it is quite possible that it will be remote from where more than 50% of fires may occur.

There is much to find fault with concerning the ionization-type smoke detector. But, it seems to me, the policies and behavior of those who make and market the devices are even more worrisome. There is no doubt that the device has INHERENT DEFECTS. I define 'inherent defects' as the defects that will cause the device, when brand new with a fresh battery, to fail to detect the smoke from a fire in time to allow the occupants to leave the home before the smoke, heat or gases block the exit ways. These inherent defects were revealed by actual fire tests years ago. There is no way that those who make and sell the devices would be oblivious to these defects. Yet, not only have the manufacturers not told the public the full truth; the truth has been concealed.

MANUFACTURER'S DISCLAIMERS

What the manufacturer has done is to insert disclaimers and instructions which supposedly will provide warnings so that the consumer will know to install other detectors of a different type. But, while the disclaimers and instructions may have value in defending against legal actions, they are so oblique that the consumer does not comprehend the dangers of an 'ionization detector installation' as the only protection.

To fully alert the consumer, clear disclaimers/instructions are needed, such as:

"This device likely will not detect smoke from a smoldering fire. Only a photoelectric detector will provide adequate protection for this type fire".

Of course, if the defects of the ionization-type detector were fully revealed, the sales might plummet. In a fire, the causes of death are likely to be a combination of carbon monoxide poisoning plus other toxic gases, smoke, a reduction in oxygen and, quite often, heat. While the term applied is often smoke inhalation or asphixia, the conditions listed above tend to be synergistic. That is the sum is usually more deadly than any one alone. Often, however, smoke is the first 'untenable' condition that appears. Smoke, of itself, rarely kills. But, what smoke can do is reduce visibility and cause irritation to the degree that a person will not travel through it to an exit way. When a person is trapped by the smoke, often death will later occur.

UNDERWRITERS LABORATORIES

I have prepared a report, based on my studies, defining 'untenable' smoke as smoke that causes a 7 percent reduction in visibility per foot. This level of smoke will reduce visibility by 70 percent at a distance of ten feet. That can be an extremely frightening condition.

It is worth noting that the testing done by Underwriters' Laboratories (UL) allows smoke to go as high as 37 percent (maximum) at the detector during the flaming fire in the large room tests where the device is 17 feet away from the fire.

In my judgment, this is allowing the smoke to go well into the untenable condition while approving the device. Of course, both UL and the smoke detector manufacturers earn profits from the marketing of smoke detectors. My conclusion is that a UL listing (approval) is NOT a guarantee that the device will perform well in the field.

Over the past ten years I have been able to obtain studies, test reports, and other information to substantiate all of the above statements.

RESEARCH DOCUMENTS AVAILABLE

The investigations conducted by The Crusade Against Fire Deaths, Inc., has produced much evidence of deceptions, performance lies, rigging of research and other criminal activities and our studies and reports are now available to the public.

Richard M Patton
Registered Fire Protection Engineer
President, Crusade Against Fire Deaths Inc.

SEE NEXT PAGE FOR DETAILS ABOUT THE CRUSADE AND ITS FOUNDER MR RICHARD M PATTON

Crusade Against Fire Deaths, Inc.

Crusade Against Fire Deaths Inc.

The Crusade

"In 1980 The International Association of Fire Chiefs said they could take no other course but to recommend photoelectric, (not ionization) smoke alarms. Since then, despite overwhelming evidence of defects, more than 50,000 deaths and 250,000 injuries have occurred in homes 'protected' by ionization smoke alarms."

Richard M Patton, F.P.E.

Crusade Against Fire Deaths, Inc.

www.FireCrusade.com

The Founder

Richard M Patton
Fire Protection Engineer

In August 2001, the 'Fire Protection Contractor' Magazine named Richard M Patton, 'Person of the Year.' Patton's 'Crusade Against Fire Deaths' started in 1976 when he sent 3,000 'Smoke Alarm Fraud' reports to Fire Chiefs and Fire Engineers across the U.S. Patton's relentless 30 year Crusade was the inspiration behind the documentary ***'Stop The Children Burning.'*** More info is at: **www.StopTheChildrenBurning.com**

"What Dick Patton has to say ... should be the starting point for a full-fledged investigation ... at a senior government level - with qualified professionals..."

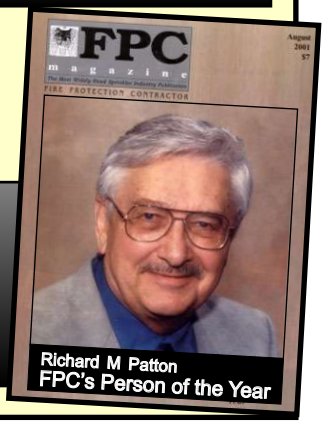
Garth Stouffer, *Manitoba Sun Newspaper*

EXPERT WITNESS

Mr Patton has been involved in court cases involving death and injury as a result of defective fire protection equipment. In *every* case when Mr Patton has laid out the evidence against the fire industry the case has been settled out of court in favor of the plaintiff. Mr Patton is available at:

Crusade Against Fire Deaths Inc.
P.O. Box 196 Citrus Heights,
CA 95611-0196, U.S.A.
Phone: (916) 721 7700 Fax: (916) 721 7704
Email: firecrusade@lanset.com
Web: www.FireCrusade.com www.ExpertClick.com

Click Here to read this independent fire industry report detailing Mr. Patton's credentials and achievements.



Position Statements

The Radioactive Ionization Smoke Alarm

THE SILENT KILLER

Decades of scientific testing and evidence from tens of thousands of 'real world' fire deaths, substantiates conclusively, that the ionization smoke detector is proven to be defective in BOTH smoldering and fast flaming fires.

Radioactive, ionization alarms have kept proper fire protection out of the home and should be banned and replaced with a combination of properly installed, interconnected, heat alarms and photoelectric smoke alarms.

DOMESTIC SPRINKLERS

Sprinkler systems protect people in commercial buildings - but over 90% of fire deaths occur at home. Less than one percent of homes have sprinkler systems. Technology exists for home owners to economically self-install a domestic sprinkler system, that together with proper fire detection devices, could virtually eliminate home fire deaths. Unfortunately, the codes of the NFPA, with the cooperation of a monopolistic style sprinkler industry, have made it difficult to self install sprinklers. Information regarding self installation can be provided upon request.