

**POSITION PAPER**

**RESIDENTIAL SMOKE ALARMS**

**By**

**North Eastern Ohio Fire Prevention Association  
(NEOFPA)**

**March 2016**

**FINAL**

**(Unanimously voted on by the membership April 5, 2010)  
(Revised March 2016)**

The North Eastern Ohio Fire Prevention Association (NEOFPA) is a fire prevention group which was formed to organize the Fire Prevention Bureaus of Fire Departments throughout northeast Ohio, so that fire prevention related matters such as code changes, fire safety issues, and other related topics could be uniformly supported and disseminated with one cohesive voice.

NEOFPA membership represents over 200 fire departments and private fire protection companies throughout Northeast Ohio and has experienced continued growth since its inception. Participating support is recognized by the State Fire Marshal's Office and the Ohio Fire Officials Association.

Education, enforcement, and engineering are the premises for all fire prevention activities. The purpose is to be effective in the execution of any changes necessary to protect the public throughout a statewide network of fire officials.

NEOFPA recognizes the need for establishing a critical position on the use of residential smoke alarms. Within the last few years, manufacturers of smoke alarms have improved technology to a level where the residential homeowner is now in a better position of being protected than in the past. Furthermore, residential fires account for the majority of all fire fatalities.

NEOFPA has closely studied residential smoke alarms for over six years. We have researched articles and studies published by The National Institute of Standards and Testing (NIST), The International Association of Fire Chiefs (IAFC), The National Fire Protection Association (NFPA), Texas A&M University and others. We have also conducted our own full-scale tests.

NEOFPA recognizes that currently there are two sensor technologies available for residential smoke alarms;

**Photoelectric** utilizes a light source to detect the visible products of combustion. These visible smoke particles are present throughout all stages of a residential fire.

**Ionization** utilizes an ionization chamber where an electrical current is generated by the use of radioactive material. When the invisible sub-micron particles of combustion enter the chamber in sufficient quantity to cause a drop in voltage, an alarm is sounded. These particles of combustion may not be present in sufficient quantity in all stages of a residential fire to create an alarm condition. NEOFPA also recognizes that ionization smoke alarms have a higher propensity to cause nuisance false alarms from ordinary cooking and shower steam than photoelectric smoke alarms. Nuisance false alarms typically result in the disabling of smoke alarms by removal of the battery, thereby rendering them inoperative.

Based on our research and testing, and with the backing of the Ohio Fire Officials Association (OFOA), NEOFPA is establishing a position that all homes be protected with residential smoke alarms utilizing photoelectric technology. Furthermore, due to the ionization sensor component and resulting greater false alarm propensity, we do not recommend the use of dual sensor, ionization/photoelectric smoke alarms.

Smoke alarm placement is critical. Current standards for residential occupancies specify smoke alarm placement on every floor level including the basement, in every sleeping room, and outside of each separate sleeping area.

NEOFPA further supports alarms which have restricted or limited battery access. This will deter the removal of batteries and their use for other purposes. Along the same line, Lithium type batteries are proven to have a long operational life (up to ten years), and are encouraged to be the battery of choice for residential alarms. Any alarm utilizing a proprietary battery with a long life span is also encouraged since the occurrences of removing the batteries are greatly reduced.

NEOFPA also recognizes the importance of early occupant notification. NEOFPA encourages and recommends the interconnection of all installed smoke alarms either by conventional hard-wiring or by installing listed wireless interconnected alarms when hard wiring is not practical. The interconnection of smoke alarms has been shown to provide the earliest warning possible to sleeping occupants, particularly when the origin of the fire is remote to the sleeping area. It is important to note that battery operated wireless interconnected smoke alarms employing photoelectric technology currently are not always available off the shelf in retail stores, but are readily available for purchase through internet retailers and direct from manufacturers. These interconnected alarms can be easily obtained and installed in existing homes by the end user.

Most smoke alarms are listed by their manufacturer as having a 10-year life span. At the end of the alarm's life span, the occupant should replace them. Given the long life battery technology and the ten-year life span of most alarms, there is a reasonable platform to encourage regular replacement of alarms and batteries.

In summary, it is important that the above recommendations be followed in their entirety whenever possible. NEOFPA issues this position statement paper in order to make clear the specific type of alarms and their locations needed in the residential setting, and to provide maximum protection with limited false alarms and deactivations. It is also our position that smoke alarms have a limited life span and replacement at the end of that life span is essential for proper life safety protection.

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