

MINNESOTA DEPARTMENT OF PUBLIC SAFETY

State Fire Marshal Division

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Smoke Detectors, Heat Detectors What You Should Know

Fire officials in Minnesota are often questioned by the public as to the performance of smoke detectors versus heat detectors when installed to provide early life saving warning in the residential environment. State Fire Marshal Division personnel also receive similar questions concerning the requirements for smoke detectors in residential buildings as required by the 2003 Minnesota State Fire Code.

Full-scale fire tests conducted since the 1960's have shown that smoke detectors are more reliable than heat detectors for early warning to provide live safety in homes. In the January/February 1993 NFPA Journal, Bukowski summarizes 10 independent studies comprising over 200 experiments that prove this point.

The following text is extracted from State Fire Marshal Division Fact Sheet titled Fire Alarms in Group R Division 3 Residential Buildings. Local fire officials are encouraged to develop similar policies to provide guidance in dealing with the issue of smoke and heat detectors in residential buildings.

SMOKE DETECTORS IN RESIDENTIAL OCCUPANCIES

Experience and full scale testing has shown that typical residential fires produce detectable quantities of smoke prior to detectable levels of heat in nearly all cases. In addition, slowly developing, smoldering fires may produce incapacitating and even lethal levels of smoke and toxic gases without any significant increase in room temperature. The Minnesota State Fire Marshal acknowledges that approved heat detectors installed in areas not appropriate for smoke detector installation such as furnace rooms, garages and unfinished attics, may provide some additional warning in the case of a fire confined to these areas. The State Fire Marshal will not accept heat detectors as an alternative or equal to smoke detectors in locations requiring the installations of smoke detectors.

IONIZATION VERSUS PHOTOELECTRIC DETECTORS

In cases where smoke detectors are subject to frequent false alarming due to cooking, smoking or similar causes, the State Fire Marshal encourages the installation of photoelectric smoke detectors as they are not as susceptible to these types of false activation.

Studies have shown that ionization detectors are better at detecting small, invisible particles of combustion that are typically present from fast, hot, flaming fires. These studies have also shown that photoelectric detectors are better at detecting larger, visible smoke particles that are more commonly seen from slow, smoldering fires. Both types of smoke detectors have been shown to be effective in detecting typical residential-type fires. Some research seems to indicate that photoelectric detectors may activate slightly sooner as many residential fires start out as slow, smoldering fires.

PRICES AND SALES PRACTICES

In Checking with a number of retail outlets, the following were typical prices:

Battery-powered (9 volt) smoke detector - ionization type	\$ 8.00
Hard-wired (120 volt) smoke detector - ionization type	\$10.00
Hard-wired smoke detector with battery back-up - ionization type	\$20.00
Battery-powered (9 volt) smoke detector - photoelectric type	\$25.00
Hard-wired (120 volt) smoke detector - photoelectric type	\$25.00
Battery-powered (9 volt) smoke detector - dual sensor type ionization and photoelectric	\$30.00
Heat detector (where appropriate, i.e. garage, furnace room)	\$30.00

There are companies in Minnesota that market and sell detection devices and/or systems for residences. These devices and/or systems can become relatively expensive and will cause homeowners to question State Fire Marshal personnel as to their value. As with any device, system, service or contractor, State Fire Marshal personnel are not permitted to endorse or recommend particular products or companies.

When questioned by homeowners as to whether or not these types of systems or equipment were a good value or fair price, State Fire Marshal personnel are advised not to comment. Homeowners are recommended to obtain price quotes from a number of different vendors before signing a contract for the installation of fire detection or alarm systems.

If an individual is concerned about questionable sales practices, the person should be advised to contact the Better Business Bureau or the Consumer Services Unit of the Attorney General's Office at (651) 296-3353.

Last Modified: September 12, 2013. For additional information, contact **Robert Dahm**, Minnesota State Fire Marshal Division, at Robert.Dahm@state.mn.us or (651) 215-0500.

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