

Improving Home Smoke Alarms



Home Smoke Alarms

- What we think we know.
- What we know.
- A perfect world.
- Barriers.
- A Proposal.



We Think We Know:

- 93% of occupied homes have a working smoke alarm. [1]
- Almost 2/3 of home fire deaths occurred in homes without working smoke alarms. [2]
- Smoke alarm failures usually result from missing, disconnected, or dead batteries. [2]
- In 1/5 of homes with smoke alarms, none were working.[3]
- Most homes do not have the protection currently recommended by NFPA 72.



[1] "American Housing Survey for the United States: 2011," U.S. Census Bureau, September 2013.

[2] Ahrens, Marty, "Smoke Alarms in U.S. Home Fires," NFPA, Quincy, MA 02169-7471, September 2011.

[3] Greene, Michael A, "2004-2005 National Sample Survey of Unreported Residential Fires," U.S. Consumer Product Safety Commission, Gaithersburg, MD, July 2009

We Know:

- We do not know all that we would like to know.
- The marketplace is complex and crowded.
- Consumers are perplexed.
- Technical challenges abound.
- Nuisance alarms are a significant part of the problem.



We Know:

- Photoelectric alarms respond faster to the smoke from a smoldering fire.
- Ionization alarms responder faster to the smoke from flaming fires that are the most immediately dangerous to occupants.(ASET down from $17\pm$ to $3\pm$ min. due to contents.)
- Dual Sensor alarms respond to both smoldering and flaming fires. (sensitivity changes undocumented)
- Combining CO with photo or ion detector can significantly reduce nuisance alarms.



We Know:

- Past approaches to the nuisance alarm problem include:
 - Reducing alarm sensitivity. ↓
 - Mandating minimum distance between alarm and cooking appliances. ↓
 - Hush or Silence button. ↑
 - Mandating smoke sensor selection. ↓ ↓ ↓
- Past approaches to reducing battery removal include:
 - Mandating AC power in new construction.
 - Mandating 10-year or Long Life batteries.



We Know:

- Pub-Ed campaigns to adapt behavior to the limitations of the technology are not as effective as we would like.
- We DO know enough to make significant improvements.
 - Technology.
 - Outreach.



In a Perfect World:

- USER FRIENDLY SMOKE ALARMS !
 - Zero Nuisance alarms.
 - Earlier alarm to provide more escape time.
 - Better awakening performance.
 - Long life / Minimal maintenance.
 - Standardized, simple performance classification and marking scheme.
 - Good, Better, Best.
 - Free of technological jargon.
 - Based on tests, not devices.



Barriers

- Regulatory
- Demand

***The brick walls are not there to keep you out,
they are there to see how much you want to get in.***

Breaking Through – Regulatory

- Standard test method for performance classification.
 - Motivation & science barriers.
 - Years away.
- Interim guidance.
 - FIEF, Vision 20/20, & Others.
 - Imperfect, based on existing knowledge & tests, technology driven.
 - If we propose it, they will react.

Breaking Through – Consumer Demand

- Manufactures will make what the marketplace and/or regulations demand.
- Big box stores and major retailers are the major customers for the manufacturers.
- Standard markings & terms.
- If we create it, they can use it.

Interim Guidance - Trial Balloon: Point of Sale Card / Trifold / Poster

The Best Smoke Alarms for Your Home

Smoke alarms should be installed inside and outside every bedroom or sleeping area, and on every level of your home. Adding smoke alarms in other areas of your home will increase safety. All the smoke alarms should be interconnected so that when one senses smoke, they all will sound.



	Bedrooms / Sleeping Area	Hall / Outside Bedrooms	Unfinished Basement	Finished Basement [4]	Top of Stairs	Family Room	Living Room	Den, Rec Room, etc.	Kitchen	Fireplace or Stove in Room	Workshop (Heated)	Furnace Room	Garage	Attic
Advanced Alarm [1]	●	●	●	●	●	●	●	●	● [5]	● [5]	●	●		
Dual Sensor Alarm	●	●	●	●	●	●	●	●	● [5]					
Photoelectric Alarm	●	● [3]	●	●	●	●	●	●	● [5]	● [5]				
Ionization Alarm	● [2]	● [3]	●	●	●	● [2]	● [2]	● [2]	● [5]					
Heat Alarm										●	●	●	●	●

● Acceptable combination of room and alarm.

Key: Best Better Good Not Recommended

Notes and other important information are on the back of this card.

Any properly installed and maintained smoke alarm that is Listed will provide early warning of fire danger for your family. These recommendations will provide early warning while minimizing nuisance alarms. **Always be sure to read and follow the instructions in the owners guide.**

Smoke Alarm Type or Feature	Best for
Advanced	Reducing nuisance alarms and in any heated area.
Dual Sensor	Detecting smoke from both smoldering and flaming fires.
Photoelectric	Responds faster to the smoke from a smoldering fire, like a fire caused by a cigarette dropped on furniture or a bed.
Ionization	Responds faster to the smoke from flaming fires that are the most immediately dangerous type of fire, like a fire caused by cooking on a stove.
Low Frequency Alarm Tones	Bedrooms and sleeping areas in homes with young children, adults over 50, and people with mild hearing impairment.

- Notes:**
- [1] - As used here, an Advanced Smoke Alarm has: (1) uses at least two sensors to detect fire: a CO sensor and either a photoelectric or an ionization sensor (or both), (2) a microchip, and (3) an alarm processing algorithm that can separate fires of concern from nuisance sources.
 - [2] - If smokers are in the home, select an Advanced Alarm, a Dual Sensor Alarm, or a Photoelectric Alarm.
 - [3] - If located within 9 feet of a bathroom, select either an Advanced Alarm or a Photoelectric Alarm.
 - [4] - Base alarm selection on the use of the room.
 - [5] - Install this alarm 9 feet or more away from any cooking appliance, stove, or fireplace.



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[2] - If smokers are in the home, select an Advanced Alarm, a Dual Sensor Alarm, or a Photoelectric Alarm.

[3] - If located within 9 feet of a bathroom, select either an Advanced Alarm or a Photoelectric Alarm.


[4] - Base alarm selection on the use of the room.

[5] - Install this alarm 9 feet or more away from any cooking appliance, stove, or fireplace.



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