

## Are Your Smoke Alarms Keeping You Safe?

Currently, there is great confusion regarding the topic of smoke alarms. There are two types of smoke alarms used to protect residents in the event of a fire; photoelectric and ionization smoke alarms- both respond differently to smoke and flame.

- Ionization smoke detection is generally more responsive to flaming fires.  
*How they work:* Ionization-type smoke alarms have a small amount of radioactive material between two electrically charged plates, which ionizes the air and causes current to flow between the plates. When smoke enters the chamber, it disrupts the flow of ions, thus reducing the flow of current and activating the alarm.
- Photoelectric smoke detection is generally more responsive to fires that begin with a long period of smoldering (called "smoldering fires").  
*How they work:* Photoelectric-type alarms aim a light source into a sensing chamber at an angle away from the sensor. Smoke enters the chamber, reflecting light onto the light sensor; triggering the alarm.

The problem with ionization smoke detectors is that they detect heat instead of smoke. Ionization smoke detectors are likely to never alert people to smoke in the air, and make it impossible to save yourself or your loved ones.

Ionization detectors are good for detecting fast moving flames, but most fire victims die from smoke or toxic gases. Ionization smoke alarms do nothing if there is a smoldering fire caused by grease, faulty electrical systems, or even lit cigarettes. While these types of fires may cause extensive flame damage, they put off lots of smoke.

Arguably, a greater problem with the ionization alarm is the number of false alarms it renders, thus leading to residents disconnecting the alarm all together.

*13 Investigates conducted a dramatic test to show the limitations of an ionization smoke detector. It's called an aquarium test. They placed some polyurethane foam from a couch cushion inside a glass fish aquarium, along with an ionization smoke detector. They then placed a soldering iron on the foam to create a slow, smoky fire inside the aquarium. Within seconds, smoke began to rise from the foam and, at that point, 13 Investigates placed a lid on the aquarium to seal in the toxic smoke.*

*Eight minutes into the test a carbon monoxide detector inside the aquarium activated, alerting them to the dangerous conditions inside the fish tank. Still, the ionization detector was silent.*

*Eleven minutes into the test, the carbon monoxide level reached 215 parts per million. That's enough to make you feel sick and well above the reading at which firefighters are required to put on protective breathing equipment.*

*At seventeen minutes, it was over 400 parts per million.*

*Twenty-three minutes into the test, the reading jumped up to 872 parts per million. That much carbon monoxide gas can bring on dizziness and convulsions and, over time, that level of exposure could kill you.*

*Twenty-five minutes into the test, still nothing from the ionization smoke alarm. But the carbon monoxide detector had reached 999 parts per million - that's as high as the CO detector would go. At that point, they opened the lid slightly to put a photoelectric smoke alarm inside the smoke-filled aquarium. It went off in less than five seconds.*

*After 30 minutes, it seemed clear the ionization alarm was not going to sound so they decided to end the test.*

For best protection, it is recommended both (ionization and photoelectric) technologies be in homes. In addition to individual ionization and photoelectric alarms, combination alarms that include both technologies in a single device are available.