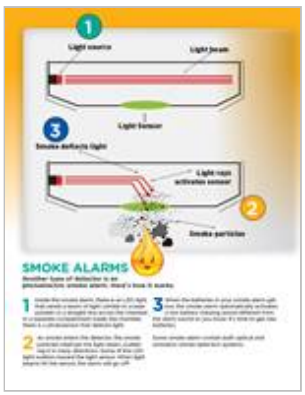
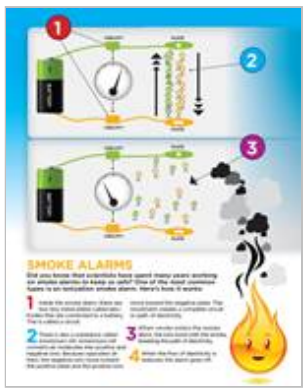
PUBLIC EDUCATION

Ionization vs photoelectric

The two most commonly recognized smoke detection technologies are ionization smoke detection and photoelectric smoke detection.





Ionization smoke alarms are 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. Download this chart on ionization smoke alarms (PDF, 943 KB).

Photoelectric smoke alarms are 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. Download this chart on photoelectric smoke alarms (PDF, 782 KB).

For each type of smoke alarm, the advantage it provides may be critical to life safety in some fire situations. Home fatal fires, day or night, include a large number of smoldering fires and a large number of flaming fires. You can not predict the type of fire you may have in your home or when it will occur. Any smoke alarm technology, to be acceptable, must perform acceptably for both types of fires in order to provide early warning of fire at all times of the day or night and whether you are asleep or awake.

For best protection, use both types of smoke alarm technologies

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

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