

## Smoke Detectors and Proper Disposal Methods

There are several different types of smoke detectors on the market, so deciding which one to purchase can be a daunting task. In addition, some smoke detectors have a small amount of the radioactive material Americium-241, leaving consumers unsure of how to dispose of the detectors in a responsible manner. Therefore, before you buy a smoke detector for your home it is best to familiarize yourself with the detector options available for consumer purchase:

- **Ionization Smoke Alarms:** Ionization smoke detectors are designed to detect fast, flaming fires. Consumers should be aware that ionization smoke detectors contain a small amount of the man-made, radioactive material Americium-241. When smoke enters the ionization chamber of this type of smoke alarm, it disrupts the flow of particles coming from the radioactive material, thus triggering the alarm. However, the amount of Americium-241 housed in the ionization chamber of the detector is extremely small and emits minimal radiation, so it is considered safe for human exposure (unless the device is tampered with).
- **Photoelectric Smoke Alarms:** Photoelectric smoke detectors function best for detecting smoky, smoldering fires. Unlike ionization smoke alarms, photoelectric smoke detectors do not contain any radioactive material but rather rely on an electric current to produce a beam of light. When the light beam is disrupted by smoke, the smoke alarm is set off.
- **Dual-Sensor Smoke Alarms:** Dual-sensor smoke alarms combine ionization and photoelectric technology in one detector. The combination of technologies helps the device detect both fast, flaming fires and smoky, smoldering fires, alleviating the need to install two separate detectors.
- **Combination Smoke/CO Alarms:** Combination Smoke and Carbon Monoxide alarms can detect both smoke and carbon monoxide. Depending on the type of smoke detector in this combination, they may or may not contain radioactive material.

The National Fire Protection Association (NFPA) recommends that consumers purchase both photoelectric and ionization smoke detectors or a dual-sensor alarm. On their own, photoelectric and ionization smoke detectors have their shortcomings in detecting certain types of fires, so combining the two leads to more reliable results.

### Telling the difference between types of smoke detectors

By law, if a smoke detector contains radioactive material, it must have a warning label posted somewhere on the product. Most warning labels can be found on the bottom of the smoke detector (the part of the detector that faces the ceiling when mounted). The label might read:

*This product is designed to detect products of combustion using ionization technology. It contains 0.9 micro curie of Americium-241, a radioactive material.*

The international symbol for radiation may also be included on the label. If a smoke detector does not have a warning label posted on the device, you can assume the detector does not have radioactive material *unless the detector appears to have been tampered with*. If there is evidence that the detector has been tampered with, assume the device is an ionization smoke detector that contains Americium-241.



## Disposing of Smoke Detectors

Some manufacturers will responsibly recycle smoke detectors manufactured by their company and later returned to them. This is the recommended option for disposing of old or spent photoelectric, ionization, and dual-sensor smoke detectors. **Note: Be sure to contact the manufacturer prior to shipping.** Below is a list of some of the manufacturers that offer free or low cost take-back programs for end-of-life smoke detectors.

Brand Name	Company	Returns Accepted	Mailing Address	Email or Phone	Special Instructions/Recommendations
Kidde (with N.C. address)	Kidde	Yes	1016 Corporate Park Dr., Mebane, NC 27302	<a href="mailto:Gpccsproductsupport2@kiddeus.com">Gpccsproductsupport2@kiddeus.com</a>  (800) 880-6788	<ul style="list-style-type: none"> <li>Residential alarms only</li> <li>Americium-241 cannot exceed 1.0 micro curies</li> <li>Intact alarms only</li> <li>Batteries removed</li> </ul>
Firex	Kidde	Yes	1016 Corporate Park Dr., Mebane, NC 27302	<a href="mailto:Gpccsproductsupport2@kiddeus.com">Gpccsproductsupport2@kiddeus.com</a>  (800) 880-6788	<ul style="list-style-type: none"> <li>(See instructions above from Kidde)</li> </ul>
First Alert, BRK	BRK Canada/Dicon Global	Yes (With a potential fee)	Dicon Global Inc. / BRK Canada, 845 Intermodal Drive, Unit #1 Brampton, ON L6T 0C6	<a href="mailto:jsmith@diconglobal.com">jsmith@diconglobal.com</a>  (905) 482-4231	<ul style="list-style-type: none"> <li>Costs can vary depending on circumstances- contact the manufacturer for further information.</li> </ul>
Masterguard	Masterguard	No, but there is a limited warranty		<a href="mailto:custsvc@appliedfire.com">custsvc@appliedfire.com</a>  (972) 393-1700	
System Sensor	System Sensor	Yes	3825 Ohio Ave., St. Charles, IL 60174	<a href="mailto:INFO@SystemSensor.com">INFO@SystemSensor.com</a>  (800) 736-7672	<ul style="list-style-type: none"> <li>Call System Sensor for a Return Authorization (RA) # prior to shipping</li> <li>\$5.00 Recycling fee per detector</li> </ul>

If you are unable to return your smoke detector containing Americium-241 to the manufacturer, contact your local transfer station for other options. It is legal to dispose of smoke detectors in a landfill because they are not considered hazardous waste. However, if the waste from your town is incinerated, smoke detectors containing Americium-241 should **not** be thrown in the trash as they will set off radiation detection alarms at the incineration facility and the load will be rejected.

To avoid this problem in the future, and to be an environmentally conscious consumer, purchase your next smoke detector from a manufacturer that provides an easy end-of-life recycling option.

**For more information:**

If you have any questions regarding smoke detectors and/or their disposal, please contact the NHDES Household Hazardous Waste Coordinator at (603) 271-2047.

Consumer Reports. 2014. "CO & Smoke Alarms" website at <http://www.consumerreports.org/cro/co-and-smoke-alarms/buying-guide.htm>.

National Fire Protection Association. 2014. "Ionization vs Photoelectric" website at <http://www.nfpa.org/public-education/by-topic/smoke-alarms/ionization-vs-photoelectric>

Off-Site Source Recovery Project. "Ionization Smoke Detectors." Online at <http://osrp.lanl.gov/Documents/Smoke%20Detector%20Fact%20Sheet.pdf>.

U.S. EPA. "Buying a Smoke Detector" website at [http://www.epa.gov/rpdweb00/sources/smoke\\_buying.html](http://www.epa.gov/rpdweb00/sources/smoke_buying.html).

U.S. EPA. "Government Requirements" website at [http://www.epa.gov/rpdweb00/sources/smoke\\_govt.html](http://www.epa.gov/rpdweb00/sources/smoke_govt.html).

U.S. Fire Administration. 2009. "Disposal of Fire/Smoke Detectors." *Tech Talk*. Volume 1, Number 2: December 2009. Online at [http://www.usfa.fema.gov/downloads/pdf/techtalk/techtalk\\_v1n2\\_1209.pdf](http://www.usfa.fema.gov/downloads/pdf/techtalk/techtalk_v1n2_1209.pdf).