



## Environmentally Responsible Smoke Alarm Recycling

### Why disregard a radiotoxic and potentially RCRA hazardous item from HHW management?

HHW programs have made great strides in the last 20 years to divert toxic materials and even relatively benign items such as latex paint and non-RCRA liquids and solids from the municipal waste stream. However to date, most HHW programs advertise to simply throw smoke alarms/detectors (“alarms”) in the trash or return them to the manufacturer. This approach has largely been driven by a void in the marketplace for a responsible and focused waste management resource for these environmentally sensitive devices. CuriePack<sup>SM</sup> fills that void.

### Ionizing smoke alarms are the only radioactive material that has secured a place in our daily lives.

It is estimated that **96% of all homes** have at least one smoke alarm. Most homes have more than one. **87% of these are ionizing** as they are the cheaper of the three types of smoke alarms on the market.

**Steady Turnover Requires Diversion.** The National Fire Protection Association (NFPA) recommends consumers replace all smoke alarms, including alarms that use 10-year batteries and hard-wired alarms, **when they are 10 years old or sooner if they do not respond properly when tested, and when you move into a new home and do not know the age of the alarms.**

**NRC Exempt?** The amount of Americium 241 (Am-241) in typical smoke alarm ranges from 0.5 microcuries to 80 microcuries. If this activity were not specifically exempted due to being inside a smoke alarm, the radioactive material would otherwise be subject to licensing by the NRC or agreement states! (Am-241 is regulated at > .05 microcuries. 20 times less than a typical modern smoke alarm.) Am-241 is a long half life (432 years) and radiotoxic isotope due to the alpha radiation it emits. (Alpha emitters are the most dangerous if ingested.) Low energy gamma radiation is also emitted which contributes to the external dose rate. While the external dose rate for most Am-241 smoke alarms (as for most other primarily alpha emitters) is low, the primary hazard is from ingestion and uptake. This potential occurs when smoke alarms are disposed as trash in the solid waste stream. The intact smoke alarms are subsequently crushed during solid waste transport and landfill compaction operations allowing for the spread of alpha contamination, or

alpha particles are released directly into the air from resource recovery combustion facilities.

**UW Regulated.** Since smoke alarms contain printed circuit boards they are considered to be an electronic device and subject to individual state universal waste/electronic waste regulations which prohibit landfill disposal.

### Did you know?

Manufacturers are not required to accept smoke alarm returns. This myth probably is the result of when smoke alarms became popular and gained widespread use in the 1960's and 1970's. They were manufactured under a general NRC license which required their return to the manufacturer after their useful life was over. Over time, NRC regulations changed and smoke alarms were manufactured under a NRC exempt distribution license. As a result, smoke alarms are no longer required to be returned to the manufacturer. Most manufacturers do not want smoke alarms back and those that do will only accept their brand. As a result, it is a daunting task to return individual smoke alarms back to the manufacturer.

### CuriePack<sup>SM</sup> is an easy, cost-effective mail back recycling solution.

Costing no more than a reactive lab pack, CuriePack<sup>SM</sup> is a one-of-a-kind, pre-paid mail back system to facilitate recycling of ionizing smoke alarms containing Am-241. The CuriePack<sup>SM</sup> consists of an outer shipping box, an inner yellow five gallon poly accumulation container, complete packaging instructions and a pre-paid UPS ground shipping label. The five gallon poly is returned in its original shipping box. The CuriePack<sup>SM</sup> qualifies as a DOT strong tight package suitable for shipping up to 25 typical size smoke alarms under the proper shipping name: Radioactive Material, Excepted Package – Articles, 7, UN2911.

Curie Environmental Services accepts the CuriePack<sup>SM</sup> at our Albuquerque, NM facility. The smoke alarms are inventoried, classified and qualified for recycling. They are either returned whole and intact to the manufacturer or dismantled for recovery of plastic and non-ferrous metals which are recycled and the radioactive material is disposed in a secure landfill licensed for radioactive materials. After processing, customers will receive a Certificate of Management.

**\*\* Please see our FAQ's for more information about smoke alarms and the CuriePack<sup>SM</sup> program.\*\***