



Safe Disposal of Ionization Smoke Alarms



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Overview

Consumers and authorities are finally beginning to discover that **ionization smoke alarms have inherent, life-threatening defects, and are a source of long lived radioactive waste.** (Note: all ionization alarms contain radioactive material).

The global movement to replace ionization alarms with safe, affordable alternatives is the subject of the film, 'Smoke Alarm Recall' at: www.theWFSF.org

Public Health Association of Australia - Radiation Concerns

On March 23, 2011, Dr Michael Fonda from the Northern Territory branch of the Public Health Association of Australia said the Northern Territory Government should consider legislating for the use of non-radioactive (i.e. photoelectric) smoke alarms:



"In an age where we have lots of exposure to radiation, and this is something that we can't really measure until years down the line and potentially generations down the line, I think there is a real cause for concern with continued exposure to low-level radioactivity."

[Doctors Push For Radioactive-Free Smoke Alarms](#)

Dr Michael Fonda, 7 News Australia, 23 March, 2011

Dr Michael Fonda

Why do ionization smoke alarms use radioactive material?

Ionization smoke alarms use ionizing radiation to generate a small electric current between two metal plates. When that current is disrupted by certain types of particles, the alarm sounds.

Ionization technology is very susceptible to nuisance alarms from burning toast or paper, cooking vapours or steam from a bathroom shower.

What Is Americium-241?

Americium-241 is a malleable, silvery white metal that does not occur naturally. It was first produced in 1944 in a nuclear reactor at the University of Chicago. Nowadays it is mainly produced as a byproduct within nuclear reactors and it is extracted from **spent nuclear fuel rods.**

It's radioactive half-life is 430 years but in total it takes millions of years for it to finish its radioactive decay process.

How Is Americium-241 Used?

The most common use of Americium-241 is in ionization smoke alarms, which rely on the alpha particle decay of Americium-241 to ionize the air in a gap between two electrodes, causing a tiny electrical current to flow between them. When a certain size of smoke (i.e. sub-micron from burning toast for example) enters the space between the electrodes, the alpha radiation is absorbed by the smoke particle, the current is interrupted, and the alarm is activated.

What health risks does Americium-241 pose?

The radiation released by Americium-241 smoke alarms is said to only marginally increase the level of background radiation already in our homes. Nonetheless, it is an established scientific principle that all radiation is harmful, so even a small increase is to be avoided if a better alternative exists.

Americium can escape from ionization smoke alarms after a fire or if the unit is taken apart, say by an inquisitive kid, [which actually happened](#) in 1995 in a small American town near Detroit.

If inhaled or swallowed Americium can get deposited in the lungs, and other organs of the body where it can remain radioactive for many years and increase the risk of developing cancer. More info: www.epa.gov/rpdweb00/radionuclides/americium.html

The disposal of radioactive waste: a burning issue that won't go away.

Many smoke alarms need replacing after ten years. This results in many thousands of ionization alarms being dumped individually into ordinary landfill each year. Each ionizing alarm remains radioactive for many thousands of years and accumulates in the environment.

Whilst many authorities consider it OK to dispose of a up to a few ionizing alarms at a time, the current position of many councils' refuse legislation is that **more than ten alarms are classified as radioactive waste and must be disposed of in specially designed repositories** which also remain radioactive for thousands of years.

It is clear that continued disposal of ionizing alarms whether in landfill or in specialized radioactive waste repositories is problematic. In contrast, there are no environmental issues with disposal of photoelectric smoke alarms.

What can we do about this radiation health and environmental risk?

1. Discover the truth about the ionization smoke alarms in your home by sending a [Smoke Alarm Disclosure Letter](#).
2. Once you discover the facts, replace all ionization alarms with photoelectric alarms.
3. Consider returning your ionization alarms directly to your State Health Department*, or a [Local Collection Centre](#) (who will forward them to the State Health Department).
4. Tell your local councillor or state politician that the waste burden imposed by ionization smoke alarms is unacceptable and needs to be dealt with urgently.
Note: 1. Mailing addresses for Australian State Health Departments are on page 7.
2. You may return your ionization alarms by Australia Post see pages 5-6.
5. Tell your local councillor or state politician that the waste burden imposed by ionization smoke alarms is unacceptable and needs to be dealt with urgently.

***Note:** Disposal restrictions for ionization alarms vary in State and Territory jurisdictions across Australia. [Current restrictions](#) allow for the disposal, in normal household waste, of up to 2 at any one time. However, due to the potential of large numbers being discarded once the facts about ionization alarms become known, please return your alarms to the 'Radiation Protection & Nuclear Safety Agency' in your State or Territory for safe nuclear waste disposal. (see page 7 for contact details).



Official Position of the World Fire Safety Foundation on Ionization Smoke Alarms in Residential Accommodation



WARN | BAN | RECALL | ZERO TOLERANCE

Due to the known, life-threatening, limitations of ionization smoke alarms in residential accommodation, which include:

- [Performance Failure](#): unable to safely detect the early, smouldering stage of fire,
- [Unacceptable False Alarm Rate](#): over 25% disconnected after two years,
- [Environmental Problems](#): Americium-241 exposure and disposal concerns,

The World Fire Safety Foundation challenges authorities, with regard to ionization smoke alarms in residential accommodation, to:

1. **WARN** the public of the aforesaid limitations of ionization smoke alarms,
2. **BAN** ionization smoke alarms from sale or for use,
3. **RECALL** ionization smoke alarms as they are not fit-for-purpose,
4. ADOPT a **ZERO TOLERANCE** policy towards the dangers posed by AM-241.

www.theWFSF.org/position 04/11

United States of America

Smoke Detector Disposal Information

The most common type of smoke detector used in residential homes contains a minute amount of radioactive material*. Although the amount of radioactive material contained in these detectors is so small that it does not pose a risk to human health, some localities, including Palo Alto, do not allow them to be disposed of with municipal waste. In this case, smoke detectors that contain radioactive material can be returned to the manufacturer for disposal. When returning a smoke detector to the manufacturer, include a note that indicates that the detector is intended for disposal and mail it to the address listed on the back of the detector.

The following manufacturers/distributors of smoke detectors will take back smoke detectors that they manufacture:

| MANUFACTURER/ DISTRIBUTOR | PHONE NUMBER | ADDRESS FOR RETURN | NOTES |
|------------------------------|--------------------------|---|---|
| AMERICAN SENSORS/ DICON | (800) 387-4219 | Call to receive a reference number and return information | Accepts 'Dicon Global' and 'American Sensors' brands only. |
| FIREX | (800) 445-8299 | Firex c/o Disposal 28 C Leigh Fisher Boulevard El Paso, TX 79906 | Website address: www.firexsafety.com. |
| FIRST ALERT/ BRK | (800) 323-9005 ext. 2 | Customer Service Department 3920 Enterprise Court Aurora, IL 60504 | Accepts up to four detectors of First Alert/BRK brand at a time. Please call ahead for mailing instructions. |
| G.E. SECURITY/ ESL | (888) 437-3287 | 12345 Southwest Levetan Drive Tualatin, OR 97062 | Will accept G.E. Security/ESL brands only. |
| HONEYWELL | (800) 328-5111 | Returned Goods, Honeywell Inc. Dock 4-MN10-3860 1985 Douglas Drive North Golden Valley, MN 55422 | Accepts Honeywell smoke detectors only. eccustomercare.com. |
| KIDDE | (800) 880-6788 ext. 1 | 1016 Corporate Park Drive Mebane, NC 27302 | Will only accept Kidde brand smoke detectors. |
| SEARS | local number | Some Sears locations are designated collection sites | Call to find out if your local Sears will accept smoke detectors. |
| SYSTEM SENSORS | (800) 736-7672 ext. 1 | Call to receive a reference number and return information | Will accept "System Sensor" brand only. Please include a payment of \$3.00 for each smoke detector mailed to cover the firm's recycling costs. |
| USI ELECTRIC/ UNIVERSAL | (800) 390-4321 ext. 1 | Attention: Disposal Department 7A Gwynns Mill Court Owings Mills, MD 21117 | Return only detectors that say "ionization" on the back. Only USI Electric or Universal brand smoke detectors accepted. Please enclose a note that indicates that the smoke detector is being returned for recycling. |

**Ionization type smoke detectors contain Americium 241.
Photoelectric type detectors do not contain radioactive material.*



European ICSD Legislation & Disposal

"...the main criterion for prohibition is that there is no justification for these products (including ionization chamber smoke detectors) as suitable alternatives exist."



Switzerland's official position on ionization chamber smoke detectors (ICSD)
European Commission's 'Radiation Protection 146' page 89, 3.3.15, para 1

www.TheWorldFireSafetyFoundation.org/legislation_eu

Australia Post Ruling Ionization Smoke Alarms - 1 of 2

The following information extracted from a series of Emails between the World Fire Safety Foundation and Australia Post from September through October, 2010:

On 02 October, 2010, at 7:23 AM, Adrian Butler wrote:

Good Morning Mr Duncan

Australia Post Ruling Request: Ionization Smoke Alarms

Thank you for your message below.

Over 6 million Australian homes are currently fitted with ionization smoke alarms. These alarms contain 37 Kbpq of AMERICIUM 241, a HIGHLY TOXIC radioactive isotope THAT HAS A HALF-LIFE of 432.2 YEARS.

In June, 2006 Australian Fire Brigades documented the dangerous defects of ionization alarms, i.e. that they do not safely detect smouldering fires and fires remote from the alarms.
www.theWFSF.org/afac

Australian Standards have also acknowledged these devices are not fit for purpose and have corrected the flawed Australian Smoke Alarm Standard: www.theWFSF.org/sa

There is a world wide push to ban ionization smoke alarms. When this happens, WE STRONGLY URGE THAT DISCARDED IONIZATION UNITS NOT BE DUMPED INTO LANDFILL for OBVIOUS environmental reasons, we would like the public to be able to dispose of them SAFELY by returning them to the State Health Department or the manufacturer in accordance with the instructions on the label on all ionization alarms. CURRENT REGULATIONS STATE THAT MORE THAN 10 IONIZATION SMOKE ALARMS IN ONE PLACE IS CLASSIFIED AS RADIOACTIVE WASTE AND MUST BE TREATED ACCORDINGLY.

We would ask that Australia Post allow these devices to be sent through ITS Postal system by the public. We know that Australia Post, uses its own postal system to deliver the ionization alarms it has sold for many years to its branches throughout Australia. Given the information above is it possible to change regulations and allow these devices (excluding batteries which we are aware are not able to be sent via the post) to be sent through the postal system?

Please advise exactly what the current position is on sending ionization alarms (sans battery) through the postal system, and if not currently allowed if Australia Post will consider changing the system.

Note: A Copy of information regarding disposal in the USA is **attached**.

Thank you.

Sincerely,

The World Fire Safety Foundation

Adrian Butler

Co-Founder, Chairman, former full-time firefighter

Suite 1, Level 4, NFPTV House

23 Ocean Grove, Currumbin, QLD 4223, Australia

Australia Post Ruling Ionization Smoke Alarms - 2 of 2

From: Rogers, Barry (HQ)
Sent: Thursday, 21 October, 2010 12:27 PM
To: White, Lee-Anne
Cc: Duncan, Matthew; Rowan, Geoff
Subject: RE: Australia Post Ruling Request: Ionization Smoke Alarms

Lee-Anne, good afternoon.

Yes you can accept these alarms as "not dangerous" and they are permitted through the air mail system as well as by road.

They are an Exception to the IATA Regulations and are addressed in Section 10, subparagraph 10.0.1.4 (b) which states;

- These Regulations do not apply to
 - radioactive material in consumer products which have received regulatory approval, following their sale to the end user.

CASA has confirmed my interpretation.

Regards

Barry Rogers

Aviation Compliance &

Dangerous Goods Manager

National Logistics

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What this ruling means to you:

It is now permissible for ionization smoke alarms to be sent through the Australian Postal system as 'normal' mail.

Please refer Australia Post employees who have any issues about accepting your ionization smoke alarms to this document: www.theWFSF.org/radiation2

The World Fire Safety Foundation thanks Australia Post for this ruling as it will allow the safe disposal of potentially millions of ionization smoke alarms.

Note:

The Foundation strongly recommends returning your ionization alarms to your State Health Department (as opposed to your manufacturer or supplier).

Australia State Health Department contact details are on the next page.

A.R.P.A.N.S.A. - Australian Government Contacts
Australian Radiation Protection and Nuclear Safety Agency
(for proper disposal of Ionization Smoke Alarms)

ACT: Director, Health Protection Service, Radiation Safety Section - ACT Health

M ACT Health, Locked Bag 5005, Weston Creek, ACT 2611 **P** 02 6205 1700 **E** hps@act.gov.au

W www.health.act.gov.au/health-services/public-health/health-protection-service/radiation-safety

NSW: Manager, Hazardous Materials & Radiation Section, Depart of Environment, Climate Change and Water

M PO Box A290, Sydney South, NSW 1232 **P** 02 9995 5959 **E** radiation@environment.nsw.gov.au

W www.environment.nsw.gov.au/radiation/index.html

NT: Manager Radiation Protection, Radiation Protection Section, Department of Health and Families

M GPO Box 40596, Casurina, NT 0811

P 08 8922 7377 **E** envirohealth@nt.gov.au **W** www.health.nt.gov.au/environmental_health

QLD: Director, Radiation Health Unit, Queensland Health **M** GPO Box 2368 Fortitude Valley BC, QLD 4006

P 07 3328 9987 **E** radiation_health@health.qld.gov.au **W** www.health.qld.gov.au/radiationhealth

SA: Manager Radiation Protection, Environment Protection Authority **M** GPO Box 2607, Adelaide, SA 5001

P 08 8463 7825 **E** radiationprotection@epa.sa.gov.au **W** www.epa.sa.gov.au

Note: The S.A. EPA does not accept ionization smoke alarms for disposal.

TAS: Senior Health Physicist, Radiation Protection Unit - Department of Health & Human Services

M GPO Box 125B, Hobart, TAS 7001 **P** 1800 671 738 **E** radiation.protection@dhhs.tas.gov.au

W www.dhhs.tas.gov.au

VIC: Team Leader, Radiation Safety - Department of Health **M** GPO Box 4541, Melbourne, VIC 3001

P 1300 767 469 **E** radiation.safety@health.vic.gov.au **W** www.health.vic.gov.au/environment/radiation

WA: Radiation Health A Team - Department of Health **M** Locked Bag 2006, Nedlands, WA 6009

P 08 9346 2260 **E** radiation.health@health.wa.gov.au **W** www.radiologicalcouncil.wa.gov.au

Note: Information extracted, 21 April, 2011, from: www.arpansa.gov.au/Regulation/Regulators/index.cfm

Email updates to: ab@theWFSF.org

The Foundation thanks:

- [Dr Rosalie Bertell](#), PhD, GNSH, Founder the International Institute of Concern for Public Health and the International Medical Commission Chernobyl, for the inspiration pursuing the safe dumping of ICSDs.
- Dr Michael Fonda, GP, member of the Public Health Association of Australia, for assistance with this document and his commitment to public health with a zero tolerance policy to AM-241.
- Acting Fire Marshall Gordon Simpkinson, Palo Alto Fire Department, CA, USA for providing information on the safe disposal of ionization smoke alarms in the USA.