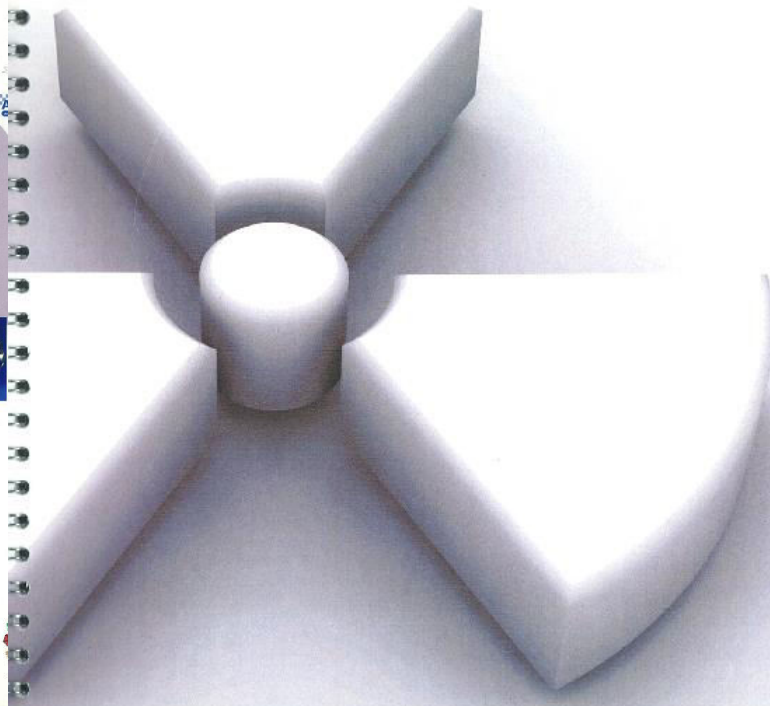


RESTRICTED



Security Requirements for Radioactive Sources

May 2008

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NaCTSO
National Counter Terrorism Security Office

CPNI
Centre for the Protection
of Critical National Infrastructure



ACPOS
Allied Counter Proliferation Operations Centre

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Security Requirements for Radioactive Sources

April 2011

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NaCTSO

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European Union legislation

- ➔ High-activity sealed sources (HASS)
Directive introduced additional controls on sources and requires member states to provide system for orphan sources:
 - ➔ Defines HASS
 - ➔ Requires users to prevent unauthorized access, loss or theft
 - ➔ Detailed requirements for control over aspects of use of HASS and disposal at end of life

Implementation of HASS Directive in UK

- ➔ Implemented in UK by HASS Regulations 2006
- ➔ Additional detailed requirements on security introduced in UK at that stage:
 - ➔ Requires security to be “adequate”
 - ➔ Permits issued by the regulator to keep or use HASS and other sealed sources in categories 1 to 4 include requirement to meet UK security standard
 - ➔ UK security standard specified as UK Security

Environmental Permitting Regulations 2010

Radioactive Substances Act 1993

- ➔ In England and Wales HASS 2005 Regs replaced by EPR 2010
- ➔ RSA93 (amended) and HASS Regs in Scotland and NI
- ➔ Standard the same across UK
- ➔ This is the enforcement platform for HASS and security, as well as safety

Permit applications

- ➔ As part of application process for sealed source permits in categories 1 to 4:
 - ➔ the security level of the premises is set by the category of the sources
 - ➔ Security measures in place are assessed by the police Counter Terrorism Security Officer (CTSA) who advises regulator
 - ➔ Any improvements needed are identified
- ➔ Security must be adequate before permit issued, but can still be subject to improvements

Regulators and CTSAs

- ➔ CTSAs are police (can be either civilian staff or Officers) who have had special training in security and intro to radiological matters
- ➔ Work for individual police forces but NaCTSO co-ordinates radiological work
- ➔ Regulators have radiological knowledge but little security training
- ➔ Need to work together to get best outcome

Regulators and CTSA's

- ➔ The regulator has responsibility for ensuring that security is obtained through permit conditions
- ➔ Security does require judgments to be made about whether something is adequate
- ➔ CTSA's advise, the regulator enforces

Permits

- ➔ Once regulator is satisfied with all requirements, including security, permit issued
- ➔ Permits require compliance with Security Book standard and notification of changes which could affect security: eg a number of small sources could aggregate to a higher security category
- ➔ Permits are classified as “Restricted”
- ➔ Regulators need to check that improvement conditions have been met – seek confirmation from CTSA if necessary

Category	Description of Practice (see Security Book for details)
1	Medical teletherapy except Sr-90 eye plaques
	Irradiators
2	Industrial radiography
	Brachytherapy – radionuclide and activity specific
3 & 4	Gauges
	Bone densitometry
	Brachytherapy – radionuclide and activity specific
5	Any practice with $A/D < 0.01$ (except above)

Other sources

- ➔ Permits issued for category 5 sources alone and open/unsealed sources continue to require sources to be looked after but are outside the security regime

The Orphan Source problem

- ➔ Almost always below HASS
- ➔ Usually end up in scrap metal consignments
- ➔ May be detected at scrapyards
- ➔ Often stored for long periods in unsafe areas
- ➔ May easily be lost, stolen or damaged
- ➔ No clear incentive for proper disposal

Orphan source origins

- ➔ Insolvency of source users
- ➔ Import in scrap metal
- ➔ Legacy radioactive materials
 - Radium luminised equipment
 - Thorium castings and welding rods
 - NORM contaminated equipment

Orphan source hazards

- ➔ Loss of control leading to public exposure
- ➔ Damage leading to public exposure and environmental contamination
- ➔ Malicious acts leading to public alarm and distress, exposure and contamination
- ➔ Massive clean up costs
- ➔ Not all orphan sources are significantly hazardous – eg domestic smoke detector

The scrapyards!



UK solution – work in progress

- ⇒ All major scrapyards now have gate monitors
- ⇒ Surveyed the 90 largest scrapyards (2013)
- ⇒ 18 had “sources” – 500 items in total
- ⇒ 8 sources >10MBq (lightning preventers)
- ⇒ Many Ra luminised instruments
- ⇒ Regulator is funding disposal of all items
- ⇒ Disposal should be completed this year

UK solution – the future?

- ➔ Fund disposal of all radioactive items as incentive to report
- ➔ Use scrapyards to intercept orphan sources
- ➔ Provide free access to Radiation Protection Advisor
- ➔ No permit likely – regulatory agreement
- ➔ Agreement to include, monitoring, reporting, safe storage, staff training
- ➔ Central Government funding needed