



Australian Government



Improving the Security of Radioactive Sources in Industrial Radiography in South East Asia

Presented by Andrew Popp
Regional Security of Radioactive Sources Project

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13th International Congress of the International Radiation Protection Association
13 to 18 May 2012, Glasgow

Regional Security of Radioactive Sources Project

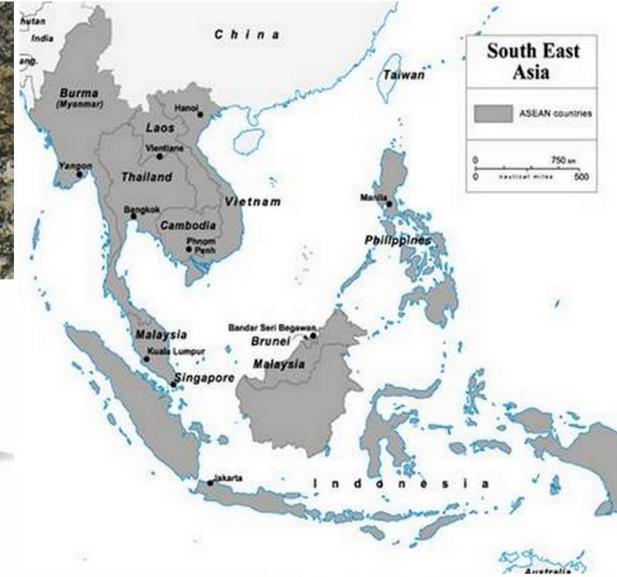
Objectives

- to improve the physical protection and security management of high risk radioactive sources throughout their life-cycle, primarily in South East Asian countries, and therefore
- to mitigate the risk of malicious use of radioactive material affecting Australian and other States' interests.

Security Level B (Industrial Radiography) Workshop, Sydney, September 2010

Workshop Partners

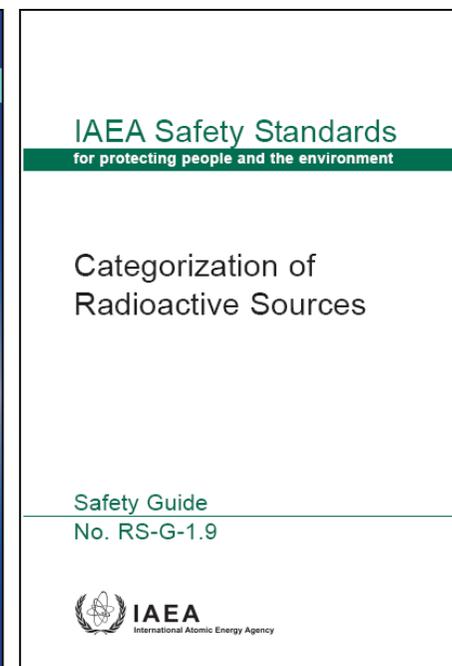
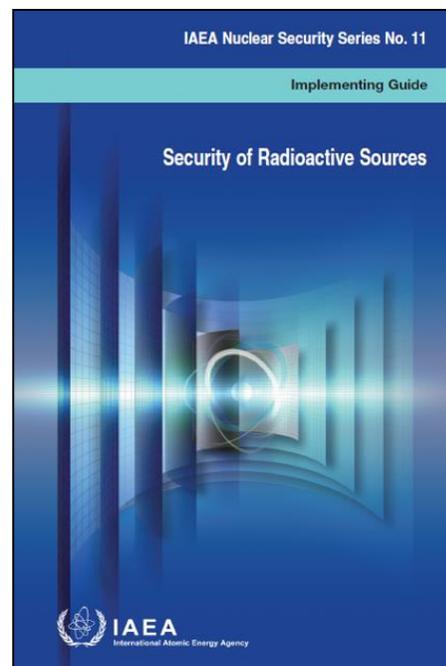
- Australia
- IAEA
- Indonesia
- Malaysia
- New Zealand
- Philippines
- Singapore
- United States
- Vietnam



| Category | Example Practices | A/D | Security Level |
|----------|------------------------------|----------------------|----------------|
| 1 | Irradiators, Teletherapy | $A/D \geq 1000$ | A |
| 2 | Industrial gamma radiography | $1000 > A/D \geq 10$ | B |
| 3 | Well logging gauges | $10 > A/D \geq 1$ | C |

Goals

- Security Level A – to **prevent** unauthorized removal of a source
- Security Level B – to **minimize** the likelihood of unauthorized removal of a source



Participants

- National nuclear operating organisations
- Regulatory authorities
- Training organisations
- Professional non-destructive testing associations
- Industrial radiography operators



Outputs

1. Developed recommended security measures for industrial radiography sources

Appendix A - Recommended Security Measures

These recommended security measures for industrial radiography sources are based on the security objectives from IAEA NSS 11 and 9 and in the case of transport, incorporating recommendations provided by representatives of Malaysia's AELB. They are structured on

- a) use - home base and field,
- b) storage - home base and field, and
- c) transport - to and from field site.

| | | Home Base – Storage | Home Base - Use | Field – Storage (Short-Term < 1 week) | Field – Storage (Long-Term) | Field - Use |
|--------------------------|--|--|---|---|---|--|
| Security function | Security objective | Security measures and associated procedures | | | | |
| Detect | Provide immediate detection of any unauthorized access to the secured area/source location | Electronic intrusion device - Balanced Magnetic Switch (BMS) and Infrared motion detector. | Enclosed: Motion detector. Operator personnel. Open/semi-enclosed: Operator personnel. Portable and/or fixed duress buttons. | Regular monitoring via personnel and/or guards. Sensor with local audio and visual alarm. In some cases the preferred alternative may be storage in a vehicle with audible alarm, near local law enforcement to facilitate prompt alarm assessment and response. Remote location: Sensor with local audio, visual alarm and a radiofrequency alarm. <i>Where measures are not feasible prohibit use or allow with limitations, i.e. cannot store sources there or case by case justification to modify measures. Requires regulatory judgement based on operator argument.</i> | Regular monitoring via personnel and/or guards. Sensor with local audio and visual alarm. Remote location: Sensor with local audio, visual alarm and a radiofrequency alarm. | Operator personnel. Laser-beam perimeter motion detector – "trip wire". |

Outputs

1. Developed **recommended security measures** for industrial radiography sources
2. Produced **guidance** on the structure and contents of a security plan for industrial gamma radiography

Appendix A - Recommended Security Measures

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Appendix B - Industrial Radiography Security Plan Guidance

Guidance on the Contents of a Security Plan for Industrial Radiography (Security Level B) Practices

SUMMARY

This document provides an example of the structure, contents, and guidance in developing a security plan for the practices involved in industrial gamma radiography following international (IAEA) guidance and best practice from industry practitioners.

A security plan should include all information necessary to describe the security approach and system being used for protection of the source(s). The level of detail and depth of content should be commensurate with the security level of the source(s) covered by the plan.

This guidance document has been produced as part of the Security Level B (industrial radiography practices) workshop held for several South East Asia countries in Sydney, 6-10 September 2010. A full report of the workshop is available¹.

CONTENTS

1. Purpose and scope
2. Operations
3. Security Management
4. Home Base - General
5. Home Base - Storage
6. Home Base - Use
7. Field - General
8. Field - Storage (Short-Term < 1 week)
9. Field - Storage (Long-Term)
10. Field - Use
11. Transport

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Appendix A - Recommended Security Measures

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Appendix B - Industrial Radiography Security Plan Guidance

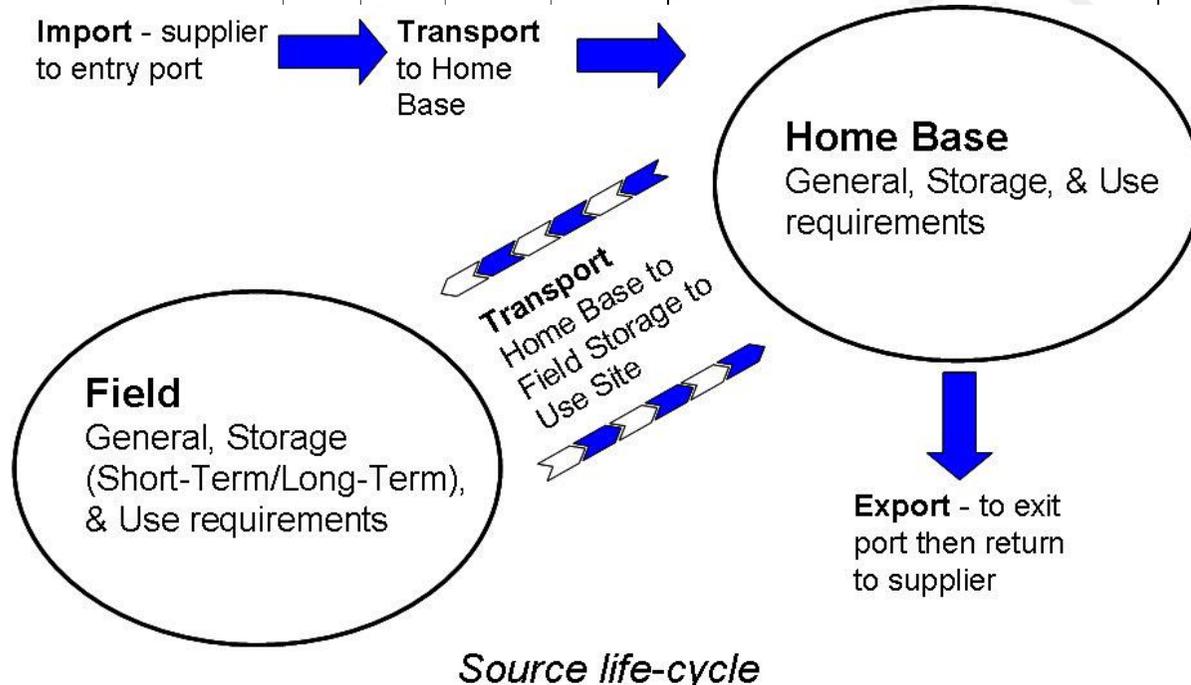
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Outputs

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Note there are “intangible” outcomes.

- **Networking**
- A **shared sense of commitment** to radioactive source security
- A **common understanding** of future challenges
- Development of a **security culture**

Appendix A - Recommended Security Measures

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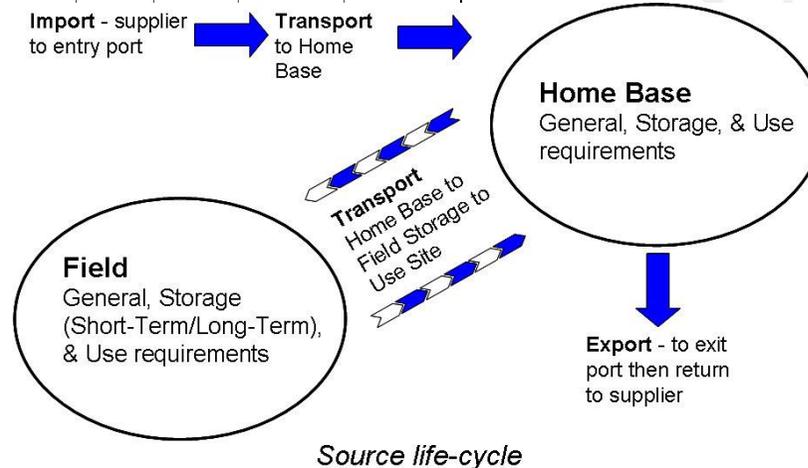
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Variable industrial radiography operational environment

- Changing circumstances
 - storage
 - use at home base and in the field
 - many movements devices
- Regulation or guidance may combine the prescriptive and performance-based approaches
- Verification of the adequacy and effectiveness of a security plan requires that regulators acquire, or have access to, requisite security
 - knowledge
 - expertise
 - experience

Companies sharing access to storage facilities at field sites

- Access control and associated security measures complement current storage controls without disrupting operations
- Industry practitioners currently exercise a high level of source and device accounting during all movements
- A good example of where best safety practice also satisfies security needs

Cross-border movements and off-shore operations

- Enhanced regulatory control through information sharing
- Stakeholders should share knowledge of the movement of sources between jurisdictions through a cooperative approach
- Networking and proactive regulatory interaction will improve national and regional capabilities and consistency in implementing and sustaining Security Level B security measures

National Regulatory Authorities

- a) Update relevant Codes of Practice, Regulations and/or Guidance
 - ✓ Underway in the Philippines, Malaysia, and Vietnam
- b) Promulgation of guidance on security plans for Category 2 industrial radiography sources
- c) Information outreach to licensees on requirements

Operators / Licensees

- a) Large Enterprises to implement and leading by example
- b) Promotion of best practice via education and outreach by NDT Associations and Societies
 - ✓ Philippines Society for Non-Destructive Testing presented these outcomes and recommendations at their 25th Annual Convention in Manila in November 2010
- c) Small and Medium Enterprises to be made aware of requirements and provided with training
- d) Conduct source security awareness seminars for client companies

International cooperation

- a) Networking between national regulatory authorities on Import/Export of high activity sources
- b) Training courses and technical train-the-trainer programs
- c) Support the development and peer review of Regulations, Codes of Practice and Guidance
- d) Operator equipment needs assessments and upgrades
- e) Security Plan workshops for Operators
- f) Development of public understanding of Category 2 industrial radiography sources
- g) Conduct additional review meetings
 - ✓ The ANSTO RSRS Project is holding a follow-up meeting in Malaysia in December 2012

Improving the Security of Radioactive Sources in Industrial Radiography in South East Asia

Conclusions

- a) The application of international guidance on the security of radioactive sources for the widespread practice of industrial gamma radiography can be readily achieved
 - ✓ Implications for other practices, such as well logging
- b) Regulatory authorities can appropriately set requirements and use a licensee's or licence applicant's Security Plan to ensure adequate and effective implementation and compliance
- c) The draft [Recommended Security Measures](#) and the draft [Guidance on the Contents of a Security Plan for Industrial Radiography](#) form a practical and effective approach for industry practitioners and regulators to ensure and verify appropriate radioactive source security

