Australian Government

Australian Safeguards and Non-proliferation Office

WHAT TO EXPECT DURING AN IAEA INSPECTION

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OR-15
STAIRS & HANDRAILS

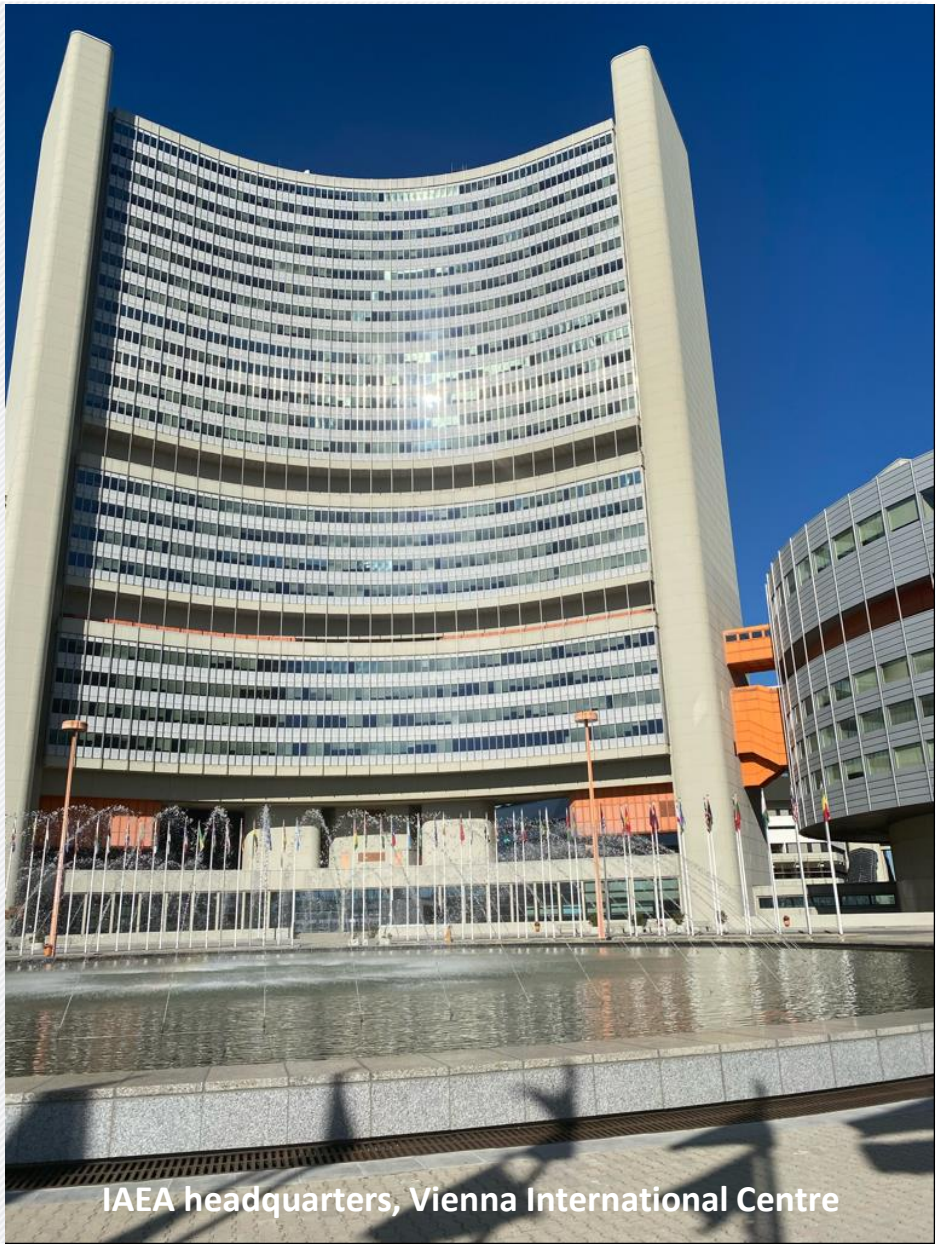
OVERVIEW

- Background
- Types of IAEA visits
- On-the-ground experience of an IAEA visit

IAEA AND ASNO

The IAEA is an international organisation (made up of member countries, including Australia) tasked with verifying nuclear activities, and preventing the proliferation of nuclear weapons.

ASNO is Australia's regulatory authority for all nuclear safeguards and nuclear security on all nuclear material



IAEA headquarters, Vienna International Centre

RADIOACTIVE MATERIALS

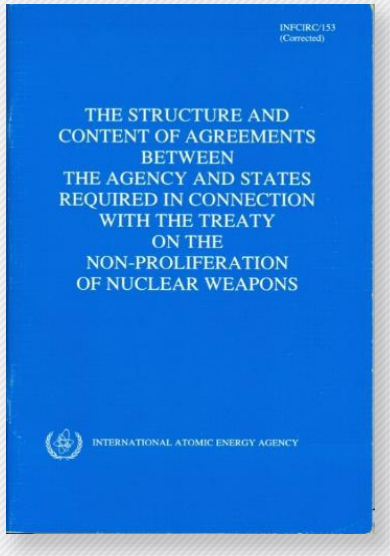
Radioactive material

- Regulated by ARPANSA, State/Territory bodies
- Not bananas!

Nuclear material

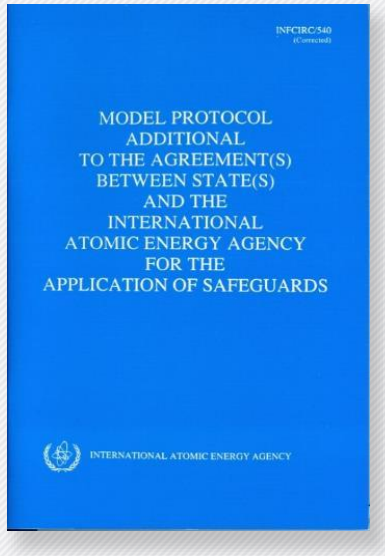
- Regulated by ARPANSA, State/Territory bodies
- Also regulated by ASNO due to proliferation risk

SAFEGUARDS AGREEMENTS



Comprehensive safeguards agreement (CSA)

Gives the IAEA the tools to determine the **correctness** of state declarations



Additional Protocol (AP)

Gives IAEA tools to determine correctness & **completeness** of state declarations

Broader IAEA access to info and locations related to nuclear activities

AUSTRALIAN SAFEGUARDS AND NON-PROLIFERATION OFFICE (ASNO)

- Manages Australia's safeguards obligations to the IAEA
- Responsible for the administration of the *Nuclear Non-Proliferation (Safeguards) Act 1987**
- Led by the Director General, who reports directly to the Minister for Foreign Affairs
- ASNO administers permits for:
  - **nuclear materials**: uranium, thorium, plutonium
  - associated material: graphite, deuterium
  - associated equipment and associated technology
  - nuclear facilities
  - **but not other radiological materials**

* ASNO is also responsible for Australia's implementation of the Chemical Weapons Convention and the Comprehensive Nuclear-Test-Ban Treaty

REPORTING AND INSPECTIONS

IAEA INSPECTIONS IN AUSTRALIA

	Inspection type	Features	Frequency in Australia			
			ANSTO	Unis & CSIRO*	Mines	Other LOFs*
CSA	Physical inventory verification (PIV)	• Scheduled • Thorough verification of inventory	Annual	0-4 per year	None	0-2
CSA	Design information verification (DIV)	• Scheduled • Check design features	With PIVs	None	None	None
CSA	Random Interim Inspection (RII) • OPAL Research Reactor or • ANSTO Buildings with hot cells	• 3 hrs notice • Less intense than PIV	1-2 per year	None	None	None
AP	Complementary Access (CA)	• 2hr notice (if onsite) • 24hr notice (if off site)	Several each year, normally in conjunction with PIV, RII	~1 per year	~1 per year	~0-1 per year

* LOF = Locations outside facilities. These typically have small holding of nuclear material. Universities and CSIRO are also LOFs, but are have a different inspection profile.

PREPARATION FOR AN IAEA INSPECTION

- IAEA provides notice to ASNO
- ASNO contacts permit holder
  - Visit details
  - Outline of logistics
- Pre-inspection visit from ASNO
  - Physical inventory taking (PIT)
  - Run through of ‘practice’ inspection
  - Discuss any updates to nuclear material inventory, building descriptions, nuclear fuel cycle-related R&D, or on-site operations since last report

ON THE DAY OF THE INSPECTION

- Arrive at agreed time at ANSTO, LOF or Mine location
- Initial meeting with Facility Operators and IAEA inspectors
  - Confirm inspection objectives, access to IAEA requested areas
  - Discuss potential safety hazards, safety/site inductions
  - Presentation of records: inventory of nuclear material

PHYSICAL INVENTORY VERIFICATION

- Inventory verification
- Attribute tests
- Environmental sampling

COMPLEMENTARY ACCESS

- Environmental sampling
- Inspection of equipment
- Discussions with researchers

INVENTORY VERIFICATION

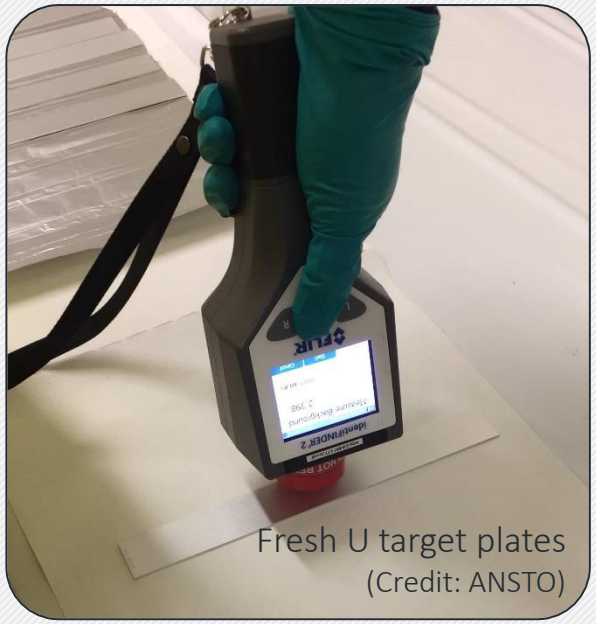
Permit holder:	University of Numbats	
Short title:	UofN	PN999
Address:	Wombatville, SA	
MBA:	AS-E	A

ASNO Listed Inventory												
Org ID number (optional)	**ASNO batch number (mandatory)**	**Serial number (optional)**	**Batch description (mandatory)**	**Storage location (optional)**	**Material category**	**Material**	**Material description**	**Measurement**	**Number of items (mandatory)**	**Element weight (mandatory)**	**Isotope weight (optional unless Enriched Uranium)**	**Weight unit**
	999-A001		Button source Eberline S/N 9999 Pu plated on disk - approx 51 Bq, equivalent to 0.02 micrograms	Storage cubby 1	P		ODAA	T	1	0.0000		g
	999-A002		Thorium Fluoride ThF4 1x1kg CERAC Speciality Inorganics metal can (unopened)	Storage shelf B1	T		FEEB	T	1	0.8000		kg
	999-A003		Uranyl Nitrate UO2(NO3)2.6H2O in 2x100g jars and 1x25g jar (open)	Storage cubby 2	D		FJAB	T	3	0.1000		kg
	D9999		Sentinel 880 Delta Radiography Camera S/N D9999	Cabinet X	D		OD1A	T	1	15.4000		kg
	999-A004		Spike solution for U/Th dating - uranium standard U500	Storage cubby 3	E		NJAC	T	1	0.0002	0.0001	g
	999-A005		Shielding blocks from decommissioned linear accelerator	Cabinet X	D		OD1A	L	1	110.0000		kg

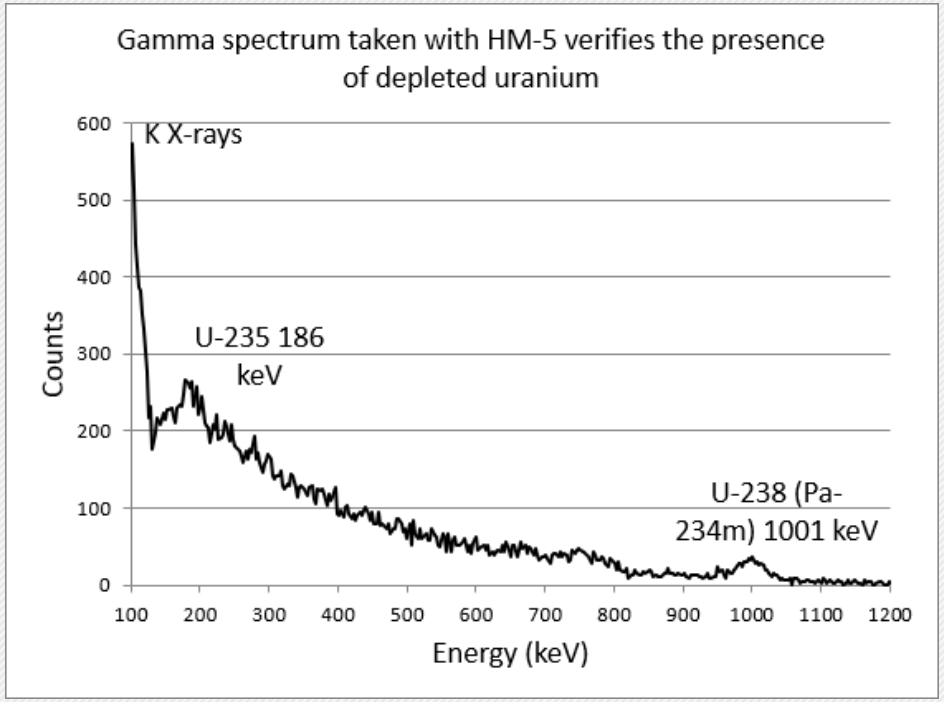
Physical items

ATTRIBUTE TESTS

- Handheld HM-5 Identifinder
- Quick, easy
- Provides yes/no answers


Fresh U target plates
(Credit: ANSTO)


ASNO inspector using HM-5
(Credit: ASNO)



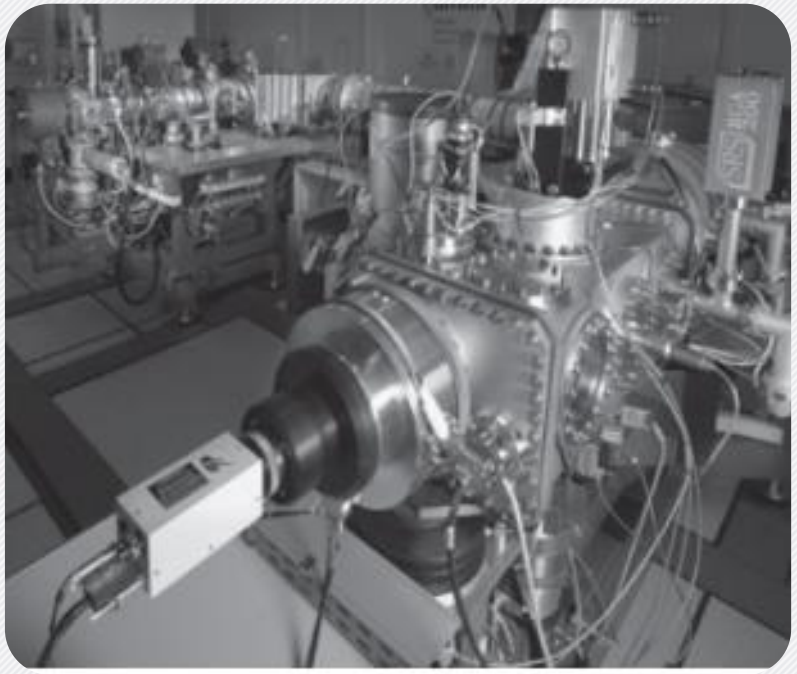

HM-5 confirms presence of DU

ENVIRONMENTAL SAMPLING

IAEA environmental sampling kit

Collecting environmental “swipe” samples

UWA’s spectrometer - part of IAEA Network of Analytical Labs (NWAL)



CONCLUSION

- ASNO regulates nuclear material in Australia
- IAEA visits Australia to verify nuclear material inventories and activities
- Preparation for an IAEA inspection (ASNO will assist)
  - ASNO will notify permit holders of upcoming inspections
  - Keep inventory up-to-date
  - Ensure key staff are available (and keep contact details up to date)
  - Ensure procedures are in place to provide IAEA access

Further information:

[ASNO annual report](https://www.dfat.gov.au/international-relations/security/asno/annual-reports)
https://www.dfat.gov.au/international-relations/security/asno/annual-reports

[Nuclear Non-Proliferation (Safeguards) Act 1987](https://www.legislation.gov.au/Details/C2016C00932)
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Australian Government
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EXAMPLE IAEA FINDINGS FROM AN INSPECTION

MBA: AS-I (CSIRO)
Material balance period: 1 July 2018–30 June 2022

Inspection activity	Date(s) of inspection	Inspection location	Statement of results	Date statement provided
Physical Inventory Verification	18 October 2022	Black Mountain	"Based on the activities conducted and the information available to date in connection with such activities, the results from this inspection were satisfactory."	7 February 2023
91(b) Statement of Conclusions (28 February 2023)		"The IAEA has concluded from its verification activities carried out at AS-I during the material balance period from 1 July 2018 to 30 June 2022, and based on the information available to date in connection with such activities, that all declared nuclear material has been accounted for and that there were no indications of the undeclared presence, production or processing of nuclear material."		

NUMBAT DATABASE