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# **Australia's Regulatory Framework for Decommissioning**

**IAEA Decommissioning Workshop - May 2012**

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**For information on ARPANSA go to [www.arpansa.gov.au](http://www.arpansa.gov.au)**



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## Topics

- ARPANSA's regulatory framework for decommissioning
- ARPANSA's experience in decommissioning
- What is decommissioning
- Managing the relationship between regulator and operator
- Good practices for consideration

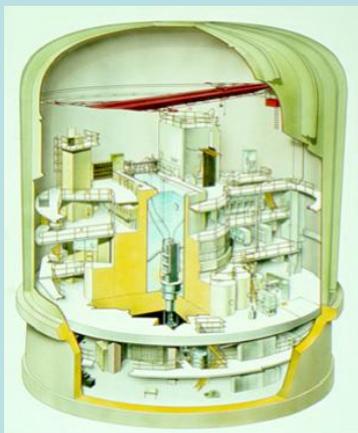


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## Federal Agencies in the 1990's

AUSTRALIAN NUCLEAR  
SCIENCE AND TECHNOLOGY  
ORGANISATION



10MW HIFAR

NUCLEAR  
SAFETY  
BUREAU

Australia's nuclear science research  
and development organisation

AUSTRALIAN RADIATION  
LABORATORIES



Australia's peak body for research  
into radiation (IR and NIR)



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# ARPANSA was formed in 1999

ARPANSA



AUSTRALIAN  
RADIATION  
LABORATORIES

NUCLEAR SAFETY  
BUREAU  
(Formally part of ANSTO)

Protecting people and the  
environment from the harmful effects  
of radiation

ARPANSA's jurisdiction covers all Commonwealth  
users of radiation and their contractors



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## ARPANS Legislative Framework (1)

- Australian Radiation Protection and Nuclear Safety Act 1998
  - establishes mission of ARPANSA
  - establishes position of CEO
  - establishes advisory council and committees
  - Defines regulatory functions (prohibitions, licences and enforcement)
  - Covers administrative arrangements (including reporting requirements and inspection powers)
- Australian Radiation Protection and Nuclear Safety Regulations 1999
  - Defines kinds of controlled apparatus and facilities
  - Details arrangements for advisory council and committees
  - Details licensing arrangements including generic licence conditions
  - Provides requirements for licence holder reporting and inspection.
  - Details exposure limits and radionuclide exemption levels

The ARPANSA website has links to all relevant ARPANS legislation



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## ARPANS Legislative Framework (2)

- Section 30 of the Act establishes a system of authorisations under a facility licence
  - prepare a site
  - construct
  - operate
  - possess or control
  - decommission, disposal or abandon
- Section 31 prohibit the possession of controlled material and apparatus without a licence
- Sections 32 to 40 deal with the issuing of licences, conditions of licences and compliance to licences
- Sections 41 to 44 deal with enforcement of a licence

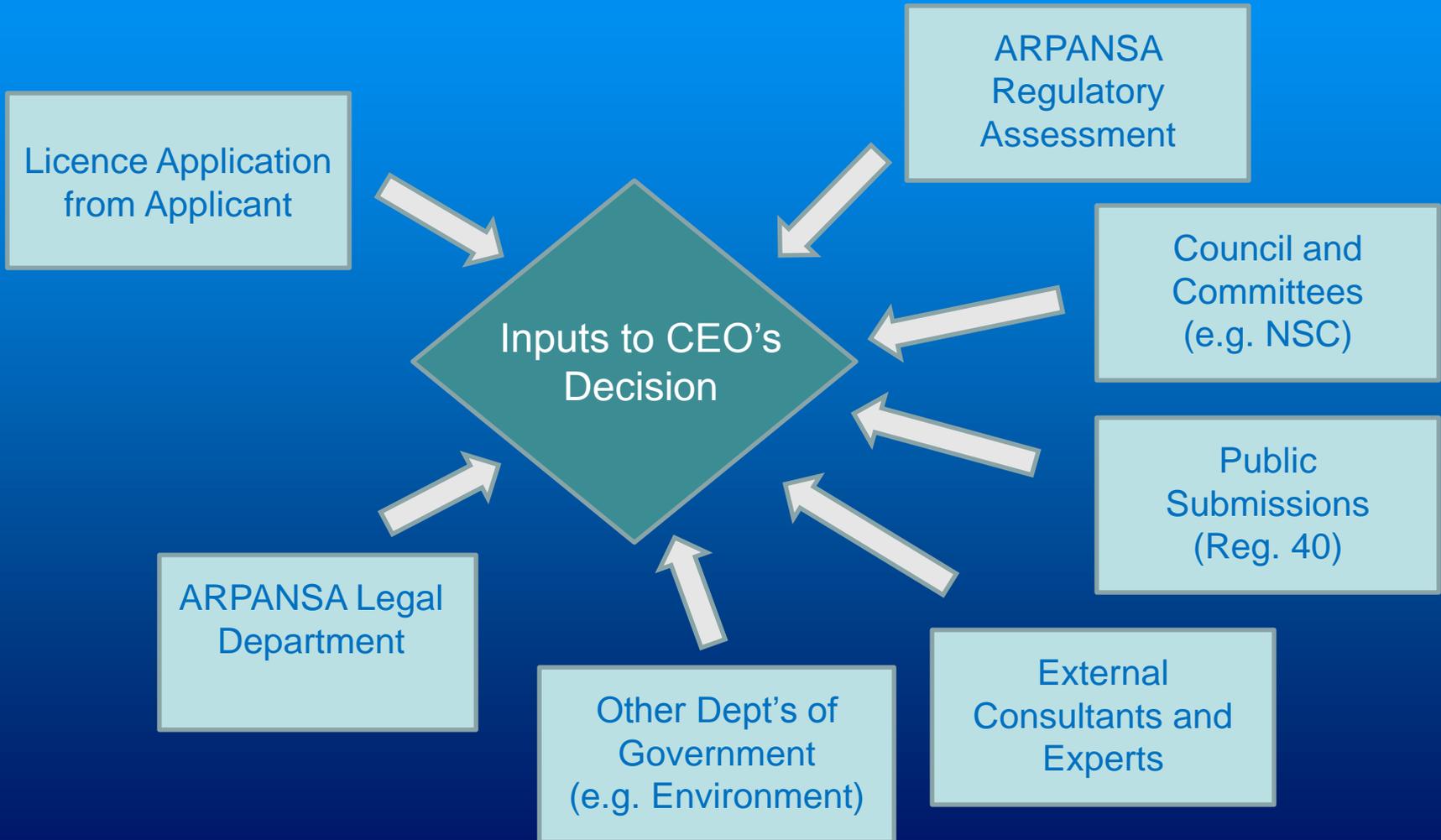
Each separate authorisation requires a licence from the CEO of ARPANSA



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# Basis for CEO's Decision to Grant a Licence





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## International Best Practice

- Section 32 of the Act requires the CEO to take into account International Best Practice (IBP) in relation to radiation protection and nuclear safety when deciding whether or not to issue a licence
- ARPANSA has demonstrated in previous decisions that the baseline for informing itself of what is IBP is primarily:
  - relevant conventions
  - IAEA Safety Fundamentals
  - IAEA Safety Requirements
  - IAEA Standards
- ARPANSA is also informed by best practices successfully applied in Australia and internationally international organisations such as the OECD/NEA and regulatory counterparts.



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# Decommissioning Applications

- Licence holders must submit an application for a licence to decommission that includes:
  - Plans and arrangements that describe how the applicant proposes ensure the health and safety of people and protection of the environment during the decommissioning process and subsequent site restoration.
    - Plan for effective control
    - Radiation Protection Plan
    - Emergency Preparedness Plan
    - Environmental Management Plan
    - Safety Management Plan
    - Radioactive Waste Management Plan\
    - Security Plan
  - A detailed decommissioning plan
  - A detailed decommissioning schedule



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# Decommissioning Projects at ARPANSA

- 100kW Moata Reactor – Lucas Heights, Sydney
  - Operated between 1961 and 1995
  - 2001 - Licence issued to Possess, Control and Decommission
  - June 2009 – Preliminary dismantling approval granted
  - January 2010 – Final stage dismantling (bio-shield) approved
  - May 2011 – Surrender of licence approved
- 10MW HIFAR, Lucas Heights, Sydney
  - Operated between 1957 and 2007
  - Sept 2008 - Licence issued to Possess or Control
- National Medical Cyclotron – Camperdown, Sydney
- 3MV Van-de-Graaff Accelerator – Lucas Heights, Sydney
- ARPANSA (ARL) was also involved in the rehabilitation of the Maralinga atomic test site



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## Regulatory Capability

- The competence of regulators is an important factor in maintaining high safety standards. It has been seen to be a contributing cause of accidents when not maintained
- ARPANSA has maintained capability in decommissioning via:
  - networking with international counterparts
  - attendance of training courses (including Argonne NL US)
  - participation in conferences, technical meetings and workshops
  - international recruitment of staff with decommissioning experience
- ARPANSA employs external consultants and expertise where knowledge gaps are identified and has MOU's in place with other national regulators for co-operation



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# What is Decommissioning?

Decommissioning is defined by the IAEA as:

*“The term decommissioning refers to administrative and technical actions taken to allow removal of some or all of the regulatory controls from a nuclear facility. These actions involve decontamination, dismantling and removal of radioactive materials, waste, components and structures. They are carried out to achieve a progressive and systematic reduction in radiological hazards and are taken on the basis of preplanning and assessment to ensure safety during decommissioning operations.”*

*IAEA Safety Standard – Decommissioning of Nuclear Power Plants and Research Reactors – WS-G-2.1, 1999  
(emphasis added)*

The ARPANS Act requires regulatory control for controlled apparatus or material containing radionuclides above the exemption levels specified in Schedule 2 of the ARPANS Regulations. Schedule 2 is based on the IAEA Basic Safety Standard.



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## What is Possess or Control?

- The term “possess or control” derives from the ARPANS Act. It equates to “safe enclosure” or “care and maintenance” and in regard to decommissioning is a strategy of deferred dismantling.
- Deferred dismantling is defined by the IAEA as:

*“The strategy in which parts of a facility containing radioactive contaminants are either processed or placed in such a condition that they can be safely stored and maintained until they can subsequently be decontaminated and/or dismantled to levels that permit the facility to be released for unrestricted use or with restrictions imposed by the regulatory body.”*

*IAEA Safety Requirements – Decommissioning of facilities Using Radioactive Material WS-R-5, 2006*

*(emphasis added)*

- The CEO of ARPANSA has previously determined that the underlined section is consistent with “having possession or control” and the remainder that the remainder defines decommissioning.



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# Operator and Regulator Relationships

- The requirement to meet a variety of standards and consider IBP can lead to tension between regulator and licence holders
- It is fundamentally important that the regulator communicates its expectations to the operator about the content of an application to decommission a facility
- The setting of regulatory expectations and their basis must be developed well in advance of the application being made.
- Effective dialogue must occur between the regulator and the operator prior to the application being made
- Key areas that the regulator expects to be covered in an application must be made clear, preferably in written regulatory guidance documents or specific letters



## Good Practices to Uphold (1)

- The avoidance of surprise – learn and understand about the facility you propose to decommission.
  - what was it's as built configuration? (rather than as designed)
  - what modifications have taken place? (and why?)
  - how has its life and use affected it? (what went wrong?)
  - how is it now?
  - how will it be during decommission?
  - how will it react to decommissioning?
  - how do you maintain situational awareness
- Thorough planning – plan for the expected and unexpected
  - where warranted develop contingency measures or strategies
  - avoid one way streets if you can not see the exit
  - be mindful of dose constraints and ALARA

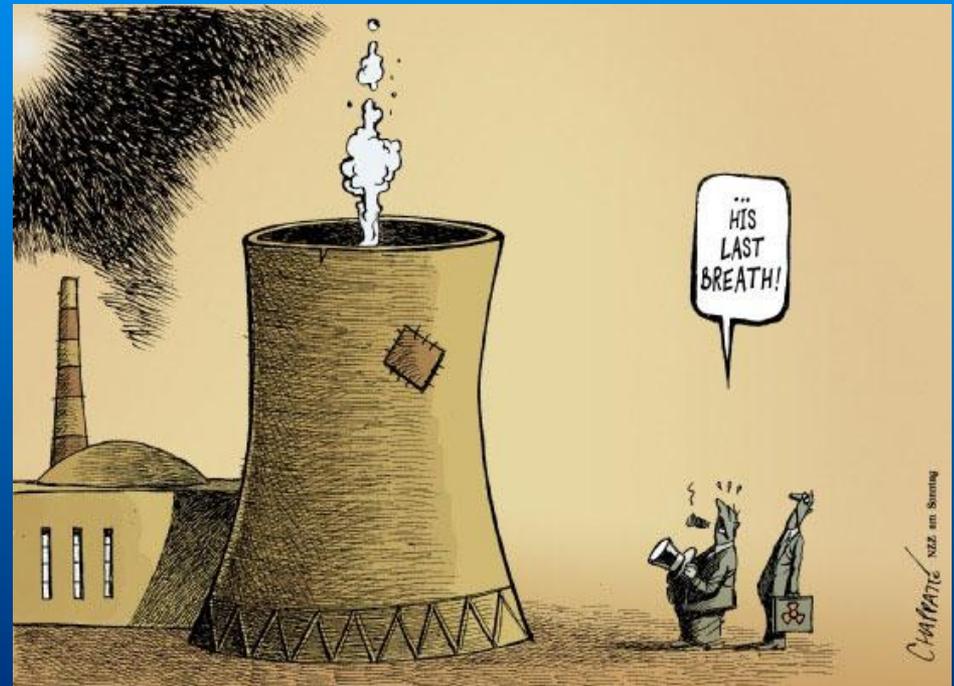


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## Good Practices to Uphold (2)

- retain and recover institutional knowledge (during operation)
  - check records
  - retain the workforce
  - engage with former employees
- radiological characterisation
  - quantify and map the hazard
  - quantify and categorise the expected decommissioning product
  - know how you will manage the product



Is the workforce also being decommissioned or redeployed?

Would this effect the decommissioning process?



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## Good Practices to Uphold (3)



- where possible learn from others not from scratch – have a support network of peers
- develop a sound understanding and consensus of IBP
  - consider a variety of options and explain your choice
- understand the importance of stakeholder relationships including the public and media throughout the entire decommissioning process



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# Final Thought and Questions



As a nuclear regulator, strive to be open minded and not prescriptive; but always look for facts that demonstrate safety