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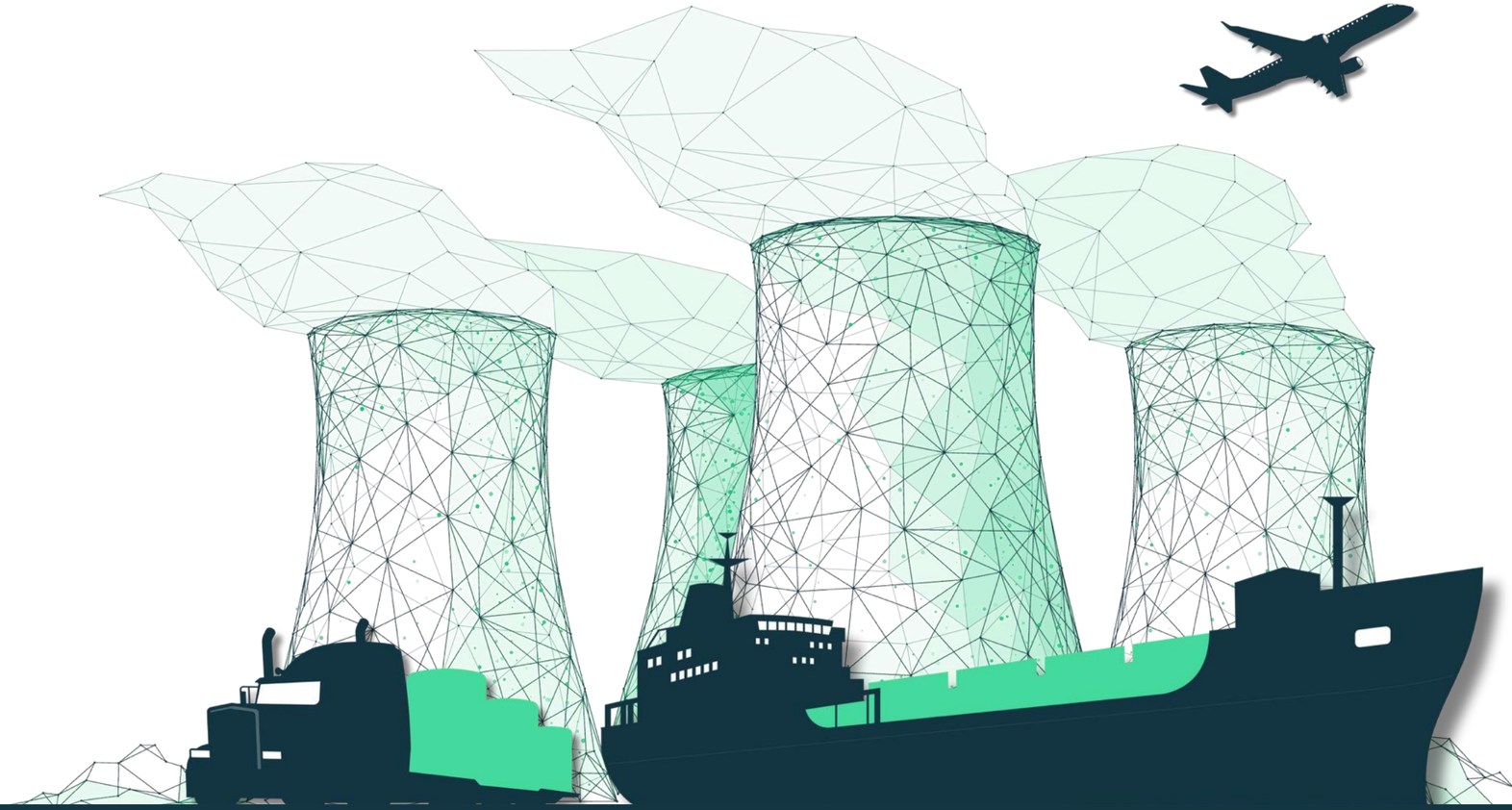
Oceania / Australasia Update

The Shifting Paradigm

Jim Hondros / Frank Boulton



28th November 2025

Frank sends his best wishes !!

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Uranium

Non-Uranium Other Radioactive Material (excluding medical)

Emerging (and Existing!) Challenges and Opportunities

- Australia is the only nation in Oceania that produces uranium.
- World's largest uranium resources.
- Only currently producing about 10% of global production ~5,000tpa.
  - **Olympic Dam:** Publicly stated expansion options – uranium as a by product only.
  - **Four Mile:** An in-situ recovery (ISR) mine, which processes its ore at the nearby Beverley plant.
  - **Honeymoon:** An ISR mine operated by Boss Energy, which recommenced. production in April 2024 after being on care and maintenance since 2013.
- Significant upside - a number of “approved” projects in Western Australia.
- Constrained by complex approvals processes.

- https://www.asno.gov.au/sites/default/files/2025-10/ASNO-Annual-Report-2024-25_0.pdf

- Increasing demand worldwide.
- |Concentrates are mainly shipped to centralised treatment facilities.
- Move to decentralise (nation based) and develop sovereign value adding capability.
- Difficult to get transported quantities..
  - Mineral sands ~ 10 Mtpa.
  - Rare Earth concentrates ~ 1 Mtpa.
  - Radioactive metal concentrates ~ <1Mtpa
- Radioactivity concentrations vary from ~1Bq/g to 100 to 1,000’s Bq/g.
- Material generally classified as NORM and radioactive.
- Transport Regulations “may” or “may not” apply.

Shifting Focus - “Critical Minerals”

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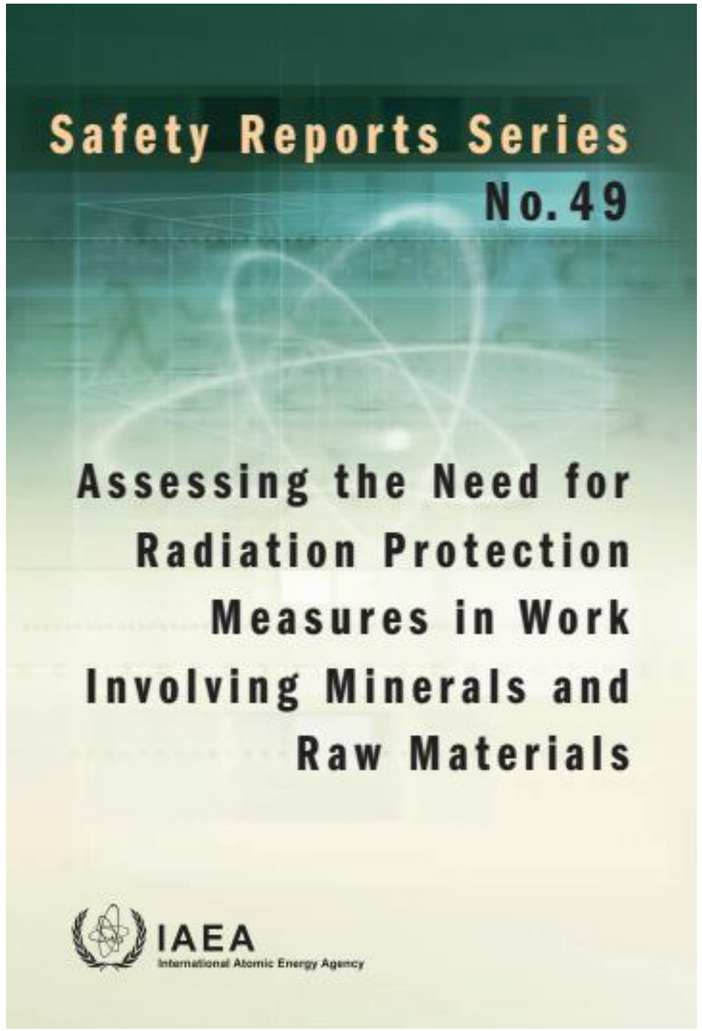

- Mining and processing of uranium ore
- Extraction of rare earth elements
- Production and use of thorium and its compounds
- Production of niobium and ferroniobium
- Mining of ores **other** than uranium ore
- Production of oil and gas
- Zircon and zirconia industries
- Manufacture of titanium dioxide pigment
- Phosphate industry
- Production of tin, copper, aluminium, zinc, lead, iron & steel
- Combustion of coal
- Water treatment

Shifting Focus – “The Very Large Net”

- Uranium has been focus for long time
- Constraints on NORM transport are real and growing
- Unclear on radioactivity levels of some materials.
- Clause 107(f) (which has been changed in the next version of SSR6)
- Is there really any value in applying radiation protection regulations to these materials?
- Overemphasises radiation.

Shifting Focus – “The Very Large Net”

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- Terminology:
  - "Radioactive" is not the same as "nuclear"
  - Unfortunately, most regulatory authorities classify "radioactive" as "nuclear"
- Main differentiator is:
  - Uranium is nuclear source material
  - NORM is generally not (although it could be used for U extraction)
- Transport of uranium is small compared to other radioactive material
- In many cases, the radiological impacts can be higher for NORM (compared to uranium)
- Avoiding constraints on very low risk material

- What does "nuclear' mean in the "WNTI world" ?
- Transport Regulations fit for purpose ?

Challenges and Opportunities

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Thank You!

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