

International Conference on the Safety of Radioactive Waste Management, Decommissioning, Environmental Protection and Remediation: Ensuring Safety and Enabling Sustainability



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Practical Safety and Sustainability decisions in Australia's Radioactive Waste Facilities

This paper will cover the implementation of sustainability initiatives and the practical decisions which have to be made for radiation safety. There are times when the decision has to be made between safety and sustainability; times when there are compromises and times when they are congruent. Safety requirements will always play a larger role in these decisions, and sustainability decisions have to work within the safety requirements. When manufacturing radiopharmaceuticals, the patient safety requires single use items which come in contact with the radioactive material, generating a lot of waste; whereas for other items such as transport containers, cleaning tools and PPE there is the ability to decontaminate these items and re-use them. This reduces the environmental impact of the process, reduces wastes for disposal however it slightly increases the radiological risks due to the decontamination steps.

The design of facilities and sustainability programs have interactions which need to be agreed. The recycling of waters from the reactor cooling circuits requires greater use of electricity, land and people, however reduces water use which is important in a country like Australia. The placement of solar panels on radioactive waste stores increases safety risks as people have to access the solar panels, and all the support structures create penetrations through which rain and debris can enter the storage facility. The conditioning of wastes into as small a volume as possible, including via Synroc processes and reprocessing of used fuel, reduces the environmental impacts as well as the cost of disposal. The design of buildings for decommissioning activities, including floor coverings and compartmentalisation of the construction techniques can improve the life cycle impact of the facility.

There are separate regulators in Australia for environmental protection and radiation protection, with both working in parallel to assess all submissions focussing on their area of expertise.

Some international techniques are not socially acceptable within Australia and lead to less efficient technologies being chosen, with incineration of solid wastes being continually rejected by Australian communities.

Primary author: KEMP, Duncan (ANSTO)

Presenter: KEMP, Duncan (ANSTO)

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