

Australian Government Department of Health and Aged Care

National Strategy for Radiation Safety

2024-2026



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Introduction

A reform agenda for radiation safety and protection in Australia - the case for change.



Australia has a long history of successfully managing risks associated with the use of radiation. Well-established legislation, codes of practice and standards in each jurisdiction contribute to this success. The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) through the Radiation Health Committee¹ produces a range of publications, including the Radiation Protection Series which promote practices to protect human health and the environment from the harmful effects of radiation². This includes a Second Edition of the National Directory for Radiation Protection; an agreed framework for radiation safety, which includes both ionising and non- ionising radiation, together with clear regulatory statements that can be adopted by the Commonwealth, states and territories³. Similarly, on behalf of Australia, ARPANSA periodically invites the International Atomic Energy Agency to peer review Australia's regulatory framework⁴.

However, Australia's multi-jurisdictional approach to radiation safety systems presents several challenges.

Radiation professionals may work across multiple jurisdictions in Australia. While state and territory regulatory systems are similar, inconsistencies exist in legislation and in the implementation of these systems. This means workers in different jurisdictions may identify, assess and manage radiation risks differently, depending on which jurisdiction they are working in. These differences also impede efforts at mutual recognition meaning that workers may need multiple licenses to do the same work across different Australian states and territories and that the data collected by each state and territory could be more transferable.

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¹ A radiation control officer from each state and territory is a member of the Radiation Health Committee. The Radiation Health Committee advises the ARPANSA CEO and the Radiation Health & Safety Advisory Council on matters relating to radiation protection, including formulating draft national policies, codes and standards for consideration by the Commonwealth, states and territories. ² Radiation Protection Series | ARPANSA

³ National Directory for Radiation Protection (arpansa.gov.au)

⁴ Integrated Regulatory Review Service | ARPANSA



Australia's emergency preparedness and incident response framework is generally cohesive and robust. A nationally coordinated approach requires arrangements to be regularly tested, including its fitness-for-purpose and allocated roles and responsibilities in the context of large-scale radiation emergencies.

Technologies and services involving radiation are evolving, and regulations across Australia have not kept pace. In some fields, emerging techniques and equipment are being safely developed and implemented (for example, lasers used for treating eye disorders), while in others, emerging technologies may not be consistently or proportionately regulated, potentially exposing some Australians to an increased risk of harm.

The National Strategy provides a national policy overlay for consistent radiation safety and protection standards across jurisdictions.

In September 2021, AUKUS, a trilateral security partnership was announced by the governments of Australia, the United Kingdom, and the United States of America. The first major initiative under AUKUS is a program to support Australia in acquiring nuclear-powered submarines for operation by the Royal Australian Navy.

While the development of nuclear-powered submarines and infrastructure to support the submarines will bring a greater focus to radiation safety, it is not the focus of this strategy.

The Australian Government has committed to establishing the Australian Naval Nuclear Power Safety Regulator to regulate nuclear-powered submarines and associated infrastructure.

What is radiation?

Radiation is energy that moves from one place to another in a form that can be described as waves or particles.⁵ Radiation sources can be natural or manufactured.

Radiation sources have many beneficial uses across a range of industries and are fundamental to the operation of the health sectors for a range of diagnostic and therapeutic procedures. Sources are also used in the industrial, mining, manufacturing and agriculture sectors and veterinary professions. Radiation is also used in scientific research and teaching, as well as in a range of consumer products (such as WiFi, or microwave ovens).

Sources of radiation are classified as being either "ionising" or "non-ionising":

- **Ionising radiation** is the result of the process in which an electron is given enough energy to break away from an atom, which causes changes at the atomic level when interacting with matter including living organisms. When humans are exposed to ionising radiation, it has the potential to alter living tissue. Ionising radiation can be produced from natural or artificial sources. Medical procedures in diagnosis, intervention and therapy are the largest sources of ionising radiation exposure to the Australian public.
- Non-ionising radiation emits significantly less energy in comparison, causing molecules and atoms to vibrate faster, rather than causing the creation of charged particles. Examples of non-ionising radiation include electrical appliances (like microwave ovens), WiFi, mobile phones and other telecommunication devices.

Despite its many applications, if used incorrectly radiation can be hazardous, and must be regulated to manage risks, and minimise adverse impacts on human health and the environment. Standards are in place to manage risks resulting from the medical uses of radiation, the operation of nuclear installations, the production, transport and use of radioactive materials, the installation of telecommunications equipment and to manage radioactive waste.

⁵ Adapted from the International Atomic Energy Agency's General Safety Requirements Part 1 (Rev 1)

The Aim of the National Strategy

The National Strategy for Radiation Safety aims to deliver a system to protect people and the environment from the harmful effects of radiation⁶, while maximising the benefits provided by technologies that use radiation to ensure the best possible public health outcomes for the community.

To achieve this, the radiation safety and protection system should be designed and implemented with the following principles:

- 01 use a risk-based and proportionate approach
- 02 maximise the benefits of using radiation safely
- 03 engage with stakeholders and build trust with the community
- 04 provide consistent and equitable radiation safety outcomes for all Australians
- 05 regulate across the full life cycle for radioactive materials
- 06 align with international safety and protection standards
- **07** use peer reviewed scientific advice and best practice processes.

⁶ For more information, refer to the International Atomic Energy Agency's Fundamental Safety Principles Safety Fundamentals No. SF-1

Objectives of the National Strategy for Radiation Safety

The National Strategy for Radiation Safety identifies four key objectives to achieve an effective radiation safety and protection system.

01 | Consistent outcomes

To reduce inconsistencies to improve safety outcomes and efficiency.

This National Strategy aims for consistent radiation safety and protection across Australia. Consistency will focus on competencies for radiation users; safety and performance testing standards for radiation sources; and exemptions for radioactive material and radiation apparatus. Implementing consistent regulatory requirements will lead to more effective and efficient safety and protection for people and the environment across all jurisdictions, both in principle and practice.

02 Incident management

To ensure the effective management of significant radiation incidents.

Responding to large scale emergency incidents requires coordination across multiple agencies, including emergency services, public health, transport, and environmental protection. It may also require coordination between the Commonwealth and affected states and territories.

Ensuring a framework is in place across agencies to manage radiation incidents will minimise the consequences of any large-scale emergency incident.

03 Science driven policy

To ensure there is a common evidence base for the development of codes and standards.

Quality data is critical for developing robust science-based policy. This, coupled with effective science-based communication, can increase community understanding about radiation and the benefits of using it safely whilst understanding the risks. A common evidence base and consistent implementation of policy will also assist in developing and maintaining the standards and codes of practice.

04 Adaptable

To be responsive and adaptable, to respond to emerging technologies and services, and manage potential harms while realising the benefits.

The strategy needs to be able to respond to future technologies to ensure the regulatory approach can keep pace with evolving technologies and services. This National Strategy seeks to ensure regulatory frameworks are responsive to emerging technologies, products and services which rely on radiation.

Implementation and governance

The National Strategy seeks to promote and enable the safe and justified uses of radiation, while considering social and economic factors, across the diverse range of uses of radiation.



Each Australian government regulator plays a role in implementing a national framework for radiation safety and protection. The Australian Health Protection Principal Committee (AHPPC) will oversee the National Strategy through the Environmental Health Standing Committee (enHealth). enHealth comprises officials from the Commonwealth, state and territory governments and will drive and track implementation of initiatives and review the effectiveness of the National Strategy.

Implementation strategies are grouped against the four objectives. While these actions focus on achieving tangible outcomes, there will continue to be engagement across governments, regulators and interested sectors to enhance radiation safety and protection in Australia.

Objective 1 | Consistent Outcomes

To improve safety outcomes and efficiency and reduce inconsistencies

Strategic actions:

No.	Strategic actions
1.1	Assess State, Territory and Commonwealth legislation for inconsistencies and make recommendations where changes might warrant a different approach
1.2	Develop and implement a national competency framework to ensure a consistent level of qualification to use radiation sources.

Objective 2 | Large-scale Incident Management

Streamline the effective management of significant radiation incidents.

Strategic actions:

No.	Strategic actions
2.1	Audit national capabilities to respond to a national radiation emergency (facilities and people).
2.2	Examine current systems for tracking security enhanced and other sealed radioactive materials and seek guidance on the adequacy of these systems from a security perspective.
2.3	Review existing incident reporting systems (including the Australian Radiation Incident Register) and consider a national radiation incident reporting system.
2.4	Establish an ongoing program of exercises to test readiness and responsiveness to a large-scale incident where these are run involving the Commonwealth and State and territory agencies at least biannually.

Objective 3 | Science driven policy

Ensure there is a common evidence base for developing codes and standards

Strategic actions:

No.	Strategic actions
3.1	Develop a nationally agreed risk matrix to support identification, assessment and management of risks in radiation practices.

Objective 4 | Adaptable

To be responsive and adaptable, to take account of emerging technologies and services, and manage potential harms while realising the benefits.

Strategic actions:

No.	Strategic actions
4.1	Identify opportunities to use modern technologies to improve the efficiency of regulatory practice.

Monitoring and reporting progress

enHealth, via the AHPPC, will report against the actions in the National Strategy to Ministers responsible for radiation protection across the Commonwealth, states and territories.

