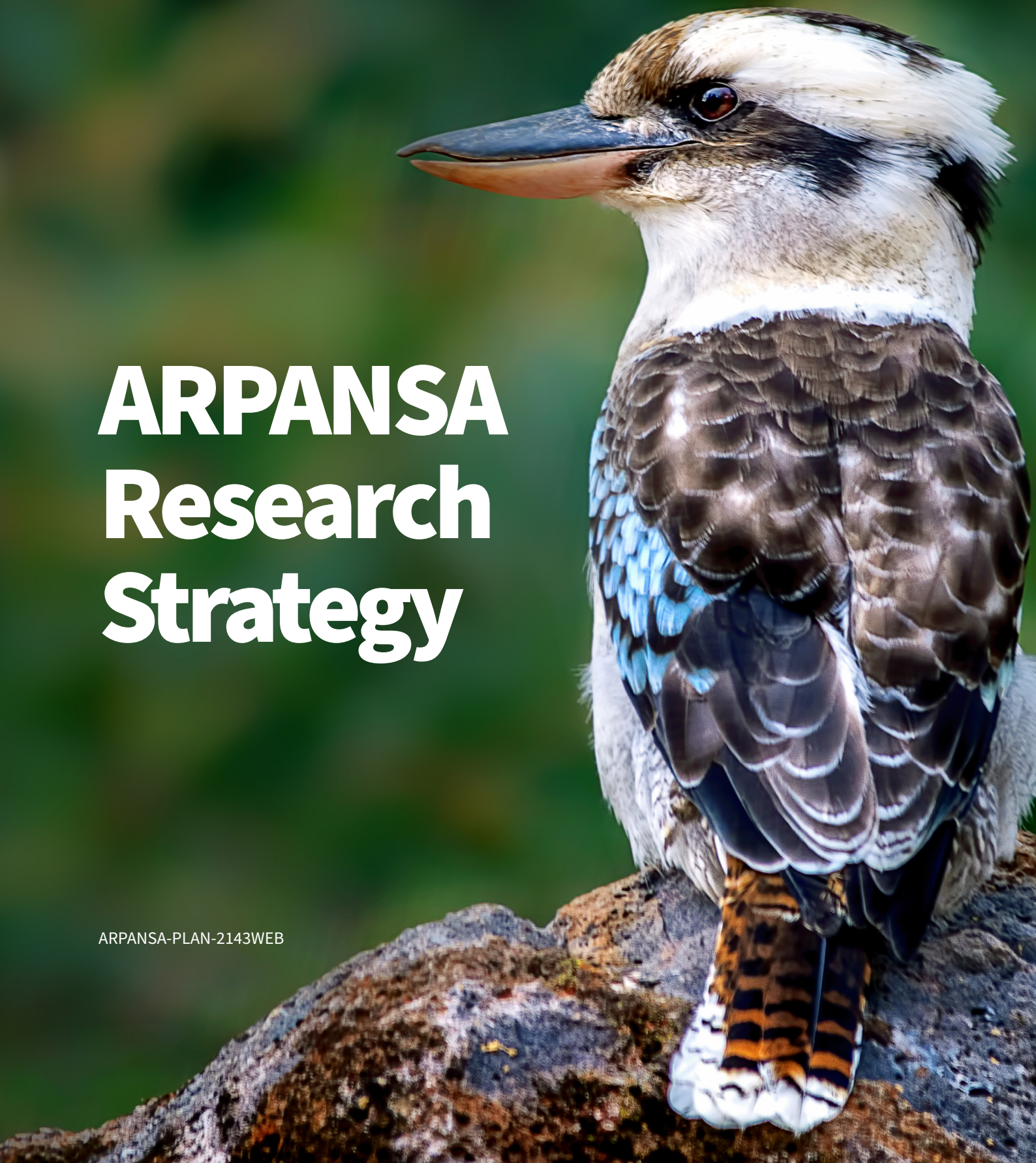
Australian Government

Australian Radiation Protection and Nuclear Safety Agency

arpansa



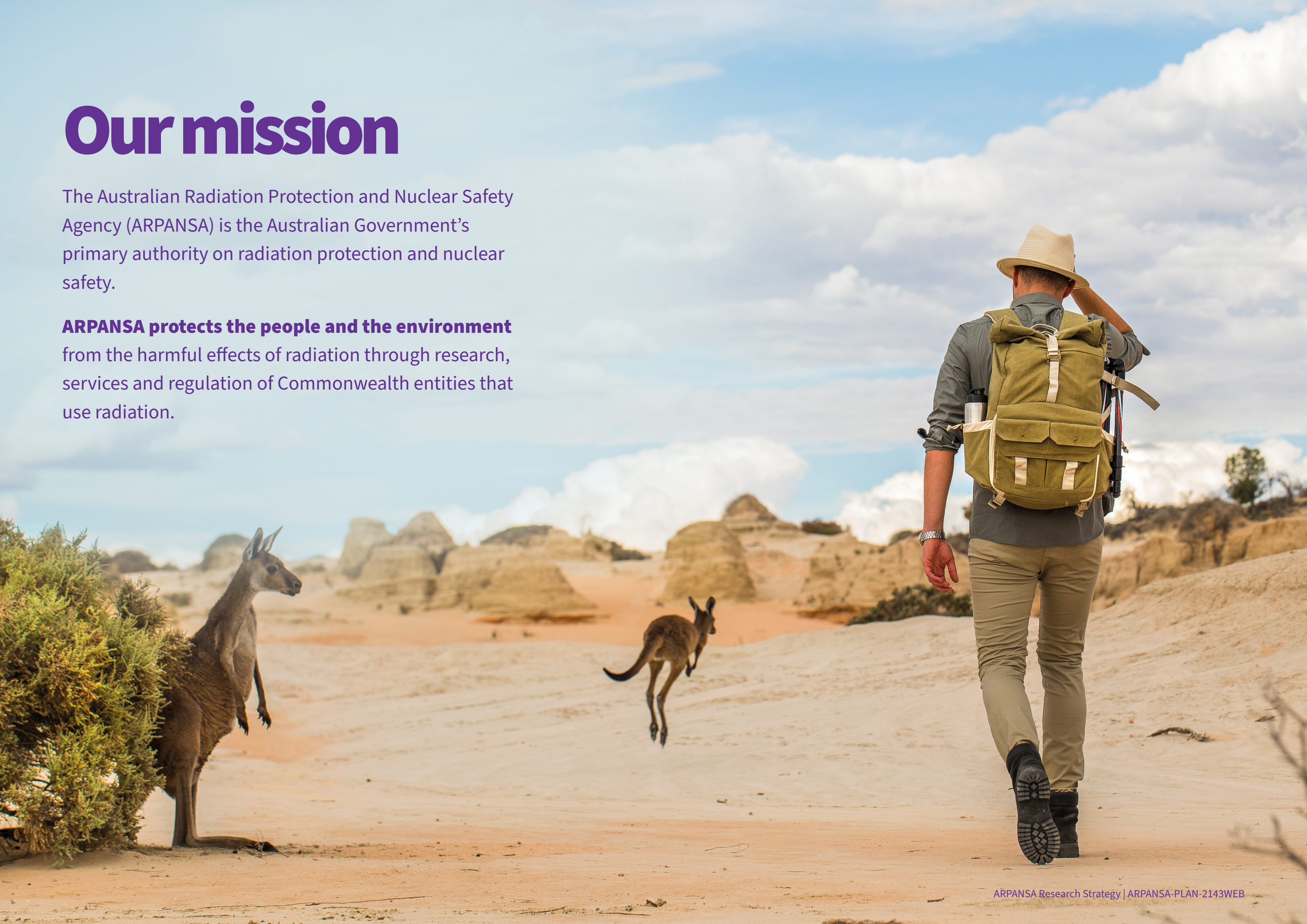
ARPANSA Research Strategy

ARPANSA-PLAN-2143WEB

Our mission

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is the Australian Government's primary authority on radiation protection and nuclear safety.

ARPANSA protects the people and the environment from the harmful effects of radiation through research, services and regulation of Commonwealth entities that use radiation.



Research priorities

01

Optimising ARPANSA services

02

Supporting regulatory activities

03

International best practice

04

Enhancing Australian innovation

05

Developing our people

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Future challenges

ARPANSA undertakes research to optimise services aimed at improving health outcomes for Australians.

Medical use of radiation

ARPANSA maintains radiation dose Standards used to calibrate all 200+ radiation therapy machines across Australia, audits the radiation therapy facilities to ensure they deliver with high accuracy and creates quality improvement tools to reduce unnecessary radiation dose during diagnosis.

Sun protection

Exposure to solar ultraviolet (UV) radiation is a major public health problem in Australia. ARPANSA measures protection factors for sunglasses, sunscreens and fabrics for clothing and shade cloth to aid in sun protection as well as maintaining a network of UV monitors to help people protect themselves from harmful UV.

Emergency preparedness

Australia has services to measure radioactivity in the environment. Research in this field helps to prepare for the possibility of a release of radiation by monitoring airborne releases and establishing environmental baseline measurements.

Radioanalytical service

These services allow for testing of food, water and soil samples to determine levels of radioactivity to assure safety and support emergency preparedness and response. New methods are being developed to optimise detection limits for radionuclides and sample types and to improve national capability.

Radon

Radon and its progeny are major contributors to public and occupational exposure and their importance is amplified in areas of high natural radioactivity and underground. ARPANSA is active in research of radon progeny deposition and the resulting radiation dose.

01

Optimising ARPANSA services

ARPANSA is responsible for assessing and authorising complex nuclear and radiological facilities from siting to construction, operation, decommissioning and closure. ARPANSA commissions research to ensure sources and facilities are effectively regulated.

Holistic safety

Human factors are the main contributor to most accidents, so ARPANSA has a continuing interest in holistic safety culture and the intersection of organisational psychology with regulatory practice.

Independent verification

ARPANSA undertakes independent measurement verification of samples from regulated commodities and sites, undertakes radioactive dispersal modelling for a range of event scenarios and assesses the significance of the results.

Regulatory advice

As the Australian Government's primary authority on radiation protection and nuclear safety, ARPANSA provides advice to government stakeholders including state regulators, customs, food safety and therapeutic goods authorities and environmental regulators. For example, ARPANSA assisted in the development of radionuclide reference levels for the National Health and Medical Research Council Drinking Water Guidelines, which are regulated by state and territory governments.

ARPANSA also holds important national data on worker doses, diagnostic reference levels and radiological incidents for use by regulators and researchers.

02

Supporting regulatory activities

ARPANSA is committed to international best practice and promoting national uniformity.

International engagement

ARPANSA contributes to the improvement of international systems of radiation protection and nuclear safety through interactions with the International Atomic Energy Agency (IAEA) and other key organisations. Standards and guidance of those bodies feed into Australian codes and standards to support a consistent best practice approach to radiation protection issues.

Solving complex problems

International collaboration is key to tackling complex problems in radiation protection. Australia works closely with United Nations bodies and non-government expert groups to support public health on a global scale. For example, Australia has contributed extensive epidemiological data to international studies of radon exposure of uranium mine workers.

Global research

ARPANSA makes ongoing contributions to United Nations Scientific Committee on the Effects of Atomic Radiation major global exposure surveys on medical, occupational, and public exposure. This includes extensive work on new model development for those surveys. ARPANSA is also engaged in the systematic review process to update the World Health Organization research gap analysis of exposure to radiofrequency electromagnetic fields. This work will identify research gaps to inform the Australian Electromagnetic Energy Program.

03

International best practice

ARPANSA houses facilities of national importance including medical linacs, a radiofrequency anechoic chamber, calibration facilities and various laboratories. These facilities are made available to the broader scientific community to enhance innovation.

Academic engagement

ARPANSA partners with universities in research that advances radiation protection and nuclear safety. Examples include development of non-human sunscreen testing methods and collaboration with universities and Traditional Owners to study long-term impacts of historical nuclear weapons tests.

Innovation in clinical practice

Continued engagement with radiation oncology community supports innovation in cancer treatment with patient safety at the core of all new treatments.

Industry collaboration

ARPANSA undertakes research relating to radon including examination of fractionation and particle sizing. This work supports occupational safety and environmental management in mining and other industries.

Funding research

Under the Government's Electromagnetic Energy Program, ARPANSA provides funding to advance scientific knowledge of radio waves and health.

04

Enhancing Australian innovation

ARPANSA staff are recognised as experts in their field of science, regulation, engagement and service. ARPANSA aims to be an employer of choice and invests heavily in the development of capability across all areas of work.

Education outreach

ARPANSA engages broadly with tertiary students and institutions to provide training and support research projects using the Agencies facilities and expertise. This helps broaden understanding and opportunities for the next generation of radiation and nuclear scientists.

Developing research skills

ARPANSA has a strong focus on research and supports staff to engage in further study and collaborative projects to continually develop knowledge and research expertise.

Contributing to tertiary education

ARPANSA has assisted universities in New South Wales, Canberra and South Australia to establish post-graduate programs in nuclear engineering, nuclear technology regulation and radiation protection. Several ARPANSA staff hold adjunct appointments at Australian Universities, supervise post-graduate students, or provide guest lectures to relevant tertiary programs.

05

Developing our people

Future challenges

There are a range of current and future challenges on the horizon for ARPANSA that will be areas of focus under the ongoing research priorities. These include:

- Preparedness for nuclear-powered vessel programs
- Disposal of radioactive waste
- Solar UV protection of sunscreens, sunglasses and fabrics for clothing and shade
- Artificial intelligence in medicine
- Australia's space program and associated radiation dose to astronauts
- Monitoring radioactivity in Australia's environment and biota, foods and drinking waters
- Wireless telecommunication frequencies
- Organisational psychology and behavioural sciences to enhance operational safety in regulatory practice
- Research in communicating radiation risk

06

Future challenges

Get involved

Partner with ARPANSA – contact research@arpansa.gov.au

Search careers – arpansa.gov.au/careers

Show your support – find us on Facebook, Twitter and LinkedIn

Find out more – visit arpansa.gov.au