

AUSTRALASIAN RADIATION PROTECTION SOCIETY

## EXPANDING THE SCOPE OF RADIATION PROTECTION

SEA WORLD RESORT  
CONFERENCE CENTRE  
GOLD COAST QUEENSLAND  
29 OCTOBER – 2 NOVEMBER 2023



# ARPS23

### PROGRAM

SUNDAY 29 OCTOBER 2023		
1300 – 1700	Exhibitor Bump In	SWRCC Veranda
1300 – 1700	Registration Desk Opens	SWRCC Veranda
1600 - 1800	ARPS Executive Meeting	Conference Room 2
1900 – 2100	Welcome Reception	SWRCC Veranda

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## MONDAY 30 OCTOBER 2023

0800 – 1700	Registration Desk Opens	SWRCC Veranda
0800 – 1700	Speaker Room Opens	C&E Boardroom
0800 – 1550	Exhibition Opens <i>Enjoy barista made coffee with thanks to</i>	SWRCC Veranda
		
0900 - 1025	<b>Plenary Session 1</b> <i>Chair: Drew Watson</i>	Conference Room 1
0900 – 0903	<b>Convenor Welcome</b> Drew Watson	
0903 - 0915	<b>Welcome to Country</b> Uncle John	
0915 – 0925	<b>Convenor Opening Comments</b> Drew Watson	
0925 – 0935	<b>Opening Address</b> Dr Riaz Akber	
0935 – 1025	<b>Keynote Address</b> Jade Ritchie Coming together for Country	
1025 – 1055	Morning Refreshments & Trade Exhibition <i>With thanks to our Morning Refreshments sponsor</i>	SWRCC Veranda
		



1100 - 1240	<b>Concurrent Session 1</b> <b>Theme: Mining &amp; Nuclear Technology</b> <b>Room: Conference Room 1</b> <i>Chair: Dr Riaz Akber</i>	<b>Concurrent Session 1.1</b> <b>Theme: Protection in Healthcare, Part 1</b> <b>Room: Conference Room 3</b> <i>Chair: Pierre Bouchereau De Pury</i>
1100 – 1120	<b>Jim Hondros, JRHC</b> The ICRP Review and Impacts for Uranium Mining and NORM	<b>Dr Samer Bakr, Cyclowest</b> Findings of the Cyclowest Radiation Survey for the GE PETtrace Cyclotron at the Bayswater Site
1120 – 1140	<b>Lauren Steen, Radiation Services WA</b> Exploring for Rare Earths in Australia – Striking a Balance	<b>Patrick Niemiec, South East Sydney Local Health District</b> Estimating Effective Dose Rate From External Exposure To Radioactive Waste Discharged From A Busy Nuclear Medicine Service
1140 – 1200	<b>Peter Nolan, Australian Safeguards and Non-Proliferation Office</b> What happens at Nuclear Safeguards Inspections in Australia conducted by the International Atomic Energy Agency	<b>Stephen Taylor, AdvanCell</b> Australian First: Lead-212 Labelled Radioligand Being Trialled as a new Prostate Cancer Therapy
1200 – 1220	<b>Blake Orr, ARPANSA</b> Update to the Reference Accident for Visiting Nuclear-Powered Vessels	<b>Cameron Jeffries, South Australia Medical Imaging</b> Holistic Radiation Protection
1220 – 1240	<b>William Shackel, Nuclear for Australia</b> A 17-year-old’s views on the Nuclear Energy Debate	<b>Prof John D Mathews, University of Melbourne</b> Modelling cancer risks following low-dose radiation from CT scans
1240 – 1340	<div>Lunch &amp; Trade Exhibition &amp; Posters Viewing With thanks to our Lunch sponsor</div> <div></div>	
	SWRCC Veranda Posters in Conference Room 1	

1345 - 1515	<b>Concurrent Session 2</b> <b>Theme: Radiation Protection Culture and Education</b> <b>Room: Conference Room 1</b> <i>Chair: Bridget McCarron</i>  	<b>Concurrent Session 2.1</b> <b>Theme: Environment &amp; Dosimetry</b> <b>Room: Conference Room 3</b> <i>Chair: Liesel Green</i>  
1345 – 1400	<b>Annelize Van Rooyen, Tellus Holdings</b> A healthy Radiation Protection Culture starts at home	<b>Dominique Scott, Radiation and Nuclear Sciences Unit</b> Uptake of NORM in Queensland native food species
1400 – 1415	<b>Caitlin Etheridge &amp; Waylon King, ANSTO</b> Nuclear Safety Technician	<b>Blake Orr, ARPANSA</b> Radiological dose from seafood: Australian estimates within the context of a new global assessment
1415 – 1430	<b>Daniel Bellifemine, EPA South Australia</b> Preparation and implementation of Australia's most recent radiation safety legislation	<b>Peter Medley, Forensic and Scientific Services</b> Groundwater influence on uptake of radium, polonium-210 and lead-210 in freshwater mussels ( <i>Velesunio Ambiguus</i> )
1430 – 1445	<b>Henriëtte Rossouw, Maniacs Learn Through Play</b> Training the next generation of radiation professionals: The Importance of Play-Based STEAM Education for the Future	<b>Dr Arne Biesiekierski, ARPANSA</b> Updating the Australian Drinking Water Guidelines: Changes made and lessons learned in updating the radiological guidance
1445 – 1500	<b>Dr Mamun Haque, ARPS</b> Radiation Protection Educator in a Multilingual and Multidisciplinary Environment – Veni Vidi Vici – A Personal Experience	<b>Trent Elms, ARPANSA</b> Dosimetry Service Provider Submissions to the Australian National Radiation Dose Register
1500 – 1515	<b>Brent Rogers, South East Sydney Local Health District</b> ARPAB Certification to Present	<b>Dr Cameron Lawrence, ARPANSA</b> Australian National Radiation Dose Register - Future Directions

1515 – 1545	<p><i>Afternoon Refreshments &amp; Trade Exhibition</i></p> <p><i>With thanks to our Afternoon Refreshments sponsor</i></p> 	SWRCC Veranda
1550 - 1720	<p><b>Panel Discussion:</b> Setting the Scene for Nuclear</p> <p><b>Room: Conference Room 1</b></p> <p>Mediator: Simon Critchley</p> <p>Panel Members:</p> <p>Professor Pete Bryant, Sizewell C</p> <p>Dr Marcus Grzechnik, ARPANSA</p> <p>Henriëtte Rossouw, Maniacs Learn Through Play</p> <p>William Shackel, Nuclear for Australia</p> <p>Jasmin Diab, Global Nuclear Security Partners Australia</p> <p>Dr Joanne Lackenby, Frazer-Nash Consultancy</p>	
1900 - 2200	<p><b>Conference Dinner</b></p> <p><i>proudly sponsored by</i></p> 	The Boatshed


## TUESDAY 31 OCTOBER 2023

0730 – 0845	<p><b>Breakfast Workshop (Registration required)</b></p> <p><b>U.S NRC RAMP - Overview and demonstration of computer codes for radiation assessments</b></p> <p><b>Presenters:</b> Katherine Gouin, James De Corrado, Blake Orr &amp; Callum Watson</p> <p>The United States Nuclear Regulatory Commission (NRC) maintains and develops a series of computer codes used for radiation assessments through their Radiation Computer Code Analysis and Maintenance program (RAMP). In 2019 APRPANSa signed a formal agreement to join RAMP and has since expanded its use of the RAMP codes. Federal and State government agencies are also granted access to the RAMP codes under the ARPANSa agreement.</p> <p>This workshop will provide an overview of the RAMP codes, walk through the content available on the RAMP website and demonstrate some worked examples using the codes, namely:</p> <ul style="list-style-type: none"><li>- VARSKIN+: Primarily used for undertaking skin dose assessments, recent upgrades to the software now allow assessments of eye, wound and neutron doses to be estimated.</li><li>- Visual Sample Plan: This tool supports development of defensible sampling plans for radiation assessments.</li></ul>	Conference Room 3
0800 – 1700	Registration Desk Opens	SWRCC Veranda
0830 - 1600	Speaker Room Opens	C&E Boardroom
0845 – 1550	<p>Exhibition Opens</p> <p><i>Enjoy barista made coffee with thanks to</i></p> <div></div>	SWRCC Veranda

0900 – 1040	<b>Plenary Session 2</b> <i>Chair: Jim Hondros</i>		Conference Room 1
0900 – 0905	<b>Welcome to Day 2</b> Jim Hondros (ARPS President)		
0905 – 0950	<b>Boyce Worthley Oration</b> Dr Riaz Akber Radiation detection for radiation protection		
0950 – 1040	<b>Keynote Address</b> Assoc Prof Susanna Guatelli Human missions to Mars: a space radiation odyssey <i>proudly sponsored by</i> <div> </div>		
1040 – 1110	<i>Morning Refreshments &amp; Trade Exhibition</i>		SWRCC Veranda
1115 - 1255	<b>Concurrent Session 3</b> <b>Theme: Managing Waste</b> <b>Room: Conference Room 1</b> <i>Chair: Bruce Wallace</i>	<b>Concurrent Session 3.1</b> <b>Theme: Radiation Protection Modelling</b> <b>Room: Conference Room 3</b> <i>Chair: Blake Orr</i>	
1115 – 1135	<b>Bryn L. Jones, entX Limited</b> New Uses for “Old” Radioisotopes	<b>Dr David Bolst, University of Wollongong</b> Shielding of defence personnel in gamma radiation environments using anthropomorphic phantoms in Geant4	
1135 – 1155	<b>Stuart Parr, ARPS</b> Intractable Waste Disposal Facility, Mount Walton East	<b>Tim Doughney, University of Adelaide</b> Modelling detector response functions to NORM and source radiation for arbitrary detector geometries	
1155 – 1215	<b>Dr Bill Miller, Australian Radioactive Waste Agency</b> Safe disposal of radioactive wastes arising from research, and the production and use of radiopharmaceuticals in Australia	<b>Daniel De Oliveira Damas, Department of Defence</b> Background Compensated Neutron Spectrum Unfolding with a NNS and the Shadow-Cone Technique	



1215 – 1235	<b>Patrick Day, ANSTO</b> ANSTO Synroc Waste Treatment Plant for Molybdenum-99 Nuclear Medicine Production	<b>Dr David Bolst, University of Wollongong</b> Using an iterative shielding approach for the first carbon ion therapy facility in the US by means of Geant4
1235 - 1255	<b>Glenn Riley, Department of Health</b> Disposal of Radioactive Material	<b>Dr Anson Chau, University of South Australia</b> A scoping review of the use of simulation in radiation protection education and training in healthcare professions
1255 – 1355	<i>Lunch, Trade Exhibition &amp; Posters Viewing</i>	
	SWRCC Veranda Posters in Conference Room 1	




1400 - 1535	<b>Concurrent Session 4</b> <b>Theme: Non-Ionising Radiation</b> <b>Room: Conference Room 1</b> <i>Chair: Philip Allanson</i>	<b>SPERA Workshop: Radiation Safety in Laboratories</b> <b>Room: Conference Room 3</b>  <i>Presenter: Dr Stephen Long, ARPANSA</i>
1400 - 1415	<b>Assoc Prof Dariusz Leszczynski, University of Helsinki</b> The lack of international and national health policies to protect persons with self-declared electromagnetic hypersensitivity	<p>This workshop provides an overview of radiation protection in the laboratory setting, with practical advice and specific reference to Australian Standard 2243, part 4:</p> <ol style="list-style-type: none"><li>1) Basics of Radiation Protection – Dose and Risk, ICRP and IAEA Basic Safety Standards</li><li>2) AS/NZS 2243.4 – A Practical Standard for Radiation Safety in Laboratories</li><li>3) Personal Radiation Monitoring – Assessing External and Internal Dose</li><li>4) Area Monitoring and PPE – Good Laboratory Practice</li></ol> <div></div>
1415 – 1430	<b>Victor Leach, Oceania Radiofrequency Scientific Advisory Association</b> Wireless technology is another environmental stressor. Are there engineering solutions that can reduce exposure (ALARA)?	
1430 – 1445	<b>Assoc Prof Ken Karipidis, ARPANSA</b> A Review of the Research into the Effects of Radiofrequency Electromagnetic Fields on Animals and Plants in the Environment	
1445 – 1500	<b>Dr Chhavi Raj Bhatt, ARPANSA</b> Personal radiofrequency–electromagnetic exposures in regional Victoria, Australia	
1500 – 1515	<b>Steven Weller, Oceania Radiofrequency Scientific Advisory Association</b> 5G Safety – State of the art from scientific reviews and their findings	
1515 - 1535	<b>Q &amp; A Session (presenters as panel)</b>	
1535 – 1605	<i>Afternoon Refreshments &amp; Trade Exhibition</i>	
		SWRCC Veranda


1610 - 1725	<b>Concurrent Session 5</b> <b>Theme: Protection in Healthcare, Part 2</b> <b>Room: Conference Room 1</b> <i>Chair: Paula Veevers</i>	<b>Concurrent Session 5.1</b> <b>Theme: Existing Exposure Situations – from Here to Beyond</b> <b>Room: Conference Room 3</b> <i>Chair: Dr Riaz Akber</i>
1610 – 1625	<b>Cameron Jeffries, South Australia Medical Imaging</b> Experiences with the Draft ARPANSA X-ray Apparatus testing standard	<b>Frank Harris, Rio Tinto</b> A community based environmental radioactivity study
1625 – 1640	<b>Brandon Preap, Hunter New England Imaging</b> Unplanned Radiation Exposure Following Extravasation: At What Stage of a Contrast-Enhanced CT Procedure will the Cumulative Effective Dose be Greater than 1 mSv?	<b>Drew Watson, Dept of Health Forensic and Scientific Services</b> Mapping Radium in Creek Bed Sediment from Introduced Groundwater
1640 – 1655	<b>Jim Hondros, JRHC</b> <b>Cameron Jeffries, South Australia Medical Imaging</b> <b>Prof Peter Bryant, Sizewell C</b> What is dose?	<b>Dr James Eagle, Institute of Environmental Science and Research</b> Radon Concentration in Workplaces across New Zealand
1655 – 1710	<b>Dr Martin Butson, NSW Environment Protection Authority</b> Radiation in the Bereavement Industry	<b>Marc Salmon, Easterly Point Environmental P/L</b> Translation of dose criteria to ASC NEPM land use criteria
1710 – 1725	<b>John Bus, ANSTO</b> Communicating Potential Skin Dose from Radioactive Contamination at ANM	<b>Dr Bhaskar Mukherjee, University of Sydney</b> ROBI a Robust Integrating Proton Fluence Counter based on COTS GaAs-LED: results of a recent near equatorial LEO Space Mission
1730 – 1830	ARPS AGM	Conference Room 1

## WEDNESDAY 1 NOVEMBER 2023

0715 – 0845	<p><b>Breakfast Workshop (Registration required)</b></p> <p><b>Working Through Example Problems on ARPAB CRSA Exam</b></p> <p><b>Presenters:</b> Brent Rogers &amp; Cameron Jeffries</p> <p>During this workshop, the presenters will work through a number of sample problems that a candidate might expect to see on the ARPAB Consulting Radiation Safety Advisor (CRSA) exam. As many of the examples will include mathematical problems, participants are asked to please bring their scientific calculators. Participation is strongly recommended for anyone considering accreditation. Participants are also encouraged to attend Brent Rogers' presentation during the plenary sessions which will include discussion on the accreditation process.</p>	Conference Room 3
0800 – 1630	Registration Desk Opens	SWRCC Veranda
0830 – 1600	Speaker Room Opens	C&E Boardroom
0830 – 1530	<p>Exhibition Opens</p> <p><i>Enjoy barista made coffee with thanks to</i></p> <div><p>Australian Government</p></div>	SWRCC Veranda

0900 – 1015	<b>Plenary Session 3</b> <i>Chair: Andrew Popp</i>	Conference Room 1
0900 – 0905	<b>Opening Comments</b>	
0905 – 0955	<b>Keynote Address</b> Professor Pete Bryant Clear as Mud: The Radiation Protection Challenges of New Nuclear Build <i>proudly sponsored by</i> 	
0955 – 1015	<b>Daniel Bellifemine, EPA South Australia</b> Why Sustainable Development Is The Most Important Issue Facing Radiation Protection	
1015 – 1045	<i>Morning Refreshments &amp; Trade Exhibition</i> <i>With thanks to our Morning Refreshments sponsor</i> 	SWRCC Veranda
1050 - 1230	<b>Plenary Session 4</b> <b>Theme: Source Recovery &amp; Largescale Mapping</b> <b>Room: Conference Room 1</b> <i>Chair: David Kruss</i>	
1050 – 1105	<b>Simon Booth, Radiation Services WA</b> Missing Radioactive Source Incident in Western Australia: Response; Investigation; and Contributing Factors	
1105 – 1120	<b>Dr Marcus Grzechnik, ARPANSA &amp; Andrew Popp, ANSTO</b> Something 'hot' is missing in the outback – how can the Commonwealth help?	
1120 – 1135	<b>Frank Harris, Rio Tinto</b> What caused a radioactive source to be lost in the WA Outback	

1135 – 1150	<b>Callum Watson, ARPANSA</b> Wide Area Gamma Radiation Mapping: Is Australia Ready in an Emergency?	
1150– 1205	<b>Matthew Wiggins, Radiation and Nuclear Sciences</b> Baseline Mapping of Ambient Gamma Radiation Dose Rates in Queensland	
1205 – 1230	<b>Q &amp; A Session (presenters as panel)</b>	
1230 – 1330	<i>Lunch &amp; Trade Exhibition</i> <i>With thanks to our Lunch sponsor</i>	 SWRCC Veranda
1335 - 1450	<b>Concurrent Session 6</b> <b>Theme: Hazards &amp; Emergency Response</b> <b>Room: Conference Room 1</b> <i>Chair: Prashant Maharaj</i>	<b>Concurrent Session 6.1</b> <b>Theme: Instrumentation</b> <b>Room: Conference Room 3</b> <i>Chair: Pushpendra Chauhan</i>
1335 – 1350	<b>Sarah Mullins, QLD Health</b> Emergency Response and Radiation Hazards	<b>Ismael Khan, Safe Radiation</b> Thoughts about charcoal canisters without charcoal for radon activity flux measurements
1350 – 1405	<b>David Kruss, EPA South Australia</b> South Australia's Emergency Response Capability	<b>Leisel Green, ARPANSA</b> Monitoring for accidental radiological releases in marine waters; an extension of the caesium extraction unit to cobalt-60 and strontium-90
1405 – 1420	<b>Dr Marcus Grzechnik, ARPANSA</b> Australia's Participation in the NEA's INEX-6 Recovery Exercise	<b>Dr Michal Fejgl, National Radiation Protection Institute</b> Development of the new tools for monitoring of ambient dose equivalent and rainwater contamination

1420 – 1435	<b>James De Corrado, ARPANSA</b> Radiological Hazard Assessment of the ARPANSA Yallambie Site	<b>Michelle Thomas, ARPANSA</b> In-situ gamma spectrometry of the Koongarra source, Northern Territory	
1435 – 1450	<b>Lachlan Whittle, ARPANSA</b> Australian Radiation Incident Register (ARIR) – Exploring new ways of working	<b>Pierre Bouchereau de Pury, Radiation and Nuclear Science</b> The right tool for the right job	
1450 – 1520	<i>Afternoon Refreshments &amp; Trade Exhibition</i> <i>With thanks to our Afternoon Refreshments sponsor</i> 		SWRCC Veranda
1525 - 1700	<b>Plenary Session 5</b> <b>Theme: Past, Present and Future</b> <i>Chair: Annelize Van Rooyen</i>		Conference Room 1
1525 – 1545	<b>Darren Billingsley, DBH Radiation Pty Ltd</b> The Triceratops that Roared		
1545 – 1605	<b>Erin McWilliams, ARPANSA</b> Updated Guidance on the Application of Exclusion, Exemption and Clearance of Radioactive Material in Australia Based on International Best Practice		
1605 – 1625	<b>Paula Veevers &amp; Jim Hondros, ARPS</b> ARPS and Its Future Role		
1625 – 1700	<b>Drew Watson and Paula Veevers</b> Awards Presentation Closing Remarks and Conference Close		

## THURSDAY 2 NOVEMBER 2023

0845 – 1200

**Technical Tour - Centre for Advanced Imaging (Registration required)**

University of Queensland

*The ARPS 2023 Conference reserves the right to amend or alter any advertised details relating to dates, program and speakers if necessary and without notice, as a result of circumstances beyond their control. All attempts will be made to keep any changes to an absolute minimum.*

**Posters will be displayed in Conference Room 1****Monday 30 October 1240 –1340****Tuesday 31 October 1255 – 1355**

Poster Number	Presenter	AFFILIATION	POSTER TITLE
1	Jack Benci Lauren Giles Tilly Shepherd	RMIT	Preparing Science Graduates for the Workforce – Work Integrated Learning (WIL) Placements
2	Jason Charwood	University of Adelaide	Quantification of artificially sorbed radionuclides as a proxy for geo-sequestration in geological disposal
3	Pushpendra Chauhan	Radiation and Nuclear Science	When is 99.99% radiochemical pure Gd-153 source okay to dispose?
4	Jefferson Chen	ARPANSA	Proficiency Testing – Monitoring Capability and Quality
5	Andrew Chicco	Westmead Hospital	Radiation Safety Issues in a Centralised ROLLIS Administration Program
6	Joonbum Choi	Korea Institute of Nuclear Safety	Performance Test of Radiation Measuring Instruments for Application to Various Radiation Fields of Radiation Generating Devices
7	Dr Tom Cresswell	ANSTO	Assessing potential environmental impacts of NORMs from offshore oil and gas infrastructure decommissioning
8	Hannan Dempsey Rachel Williams Lachlan Whittle	ARPANSA	The ARPANSA Graduate Program
9	Dr Jennifer Diffey	Hunter New England Imaging	Evaluation of Radiation Dose Reduction to Cardiologists by Tableside Shielding Devices



10	Liesel Green	ARPANSA	A decade of radiocaesium monitoring using the Caesium Extraction Unit- a review
11	Assoc Prof Dariusz Leszczynski	University of Helsinki	Scientific inadequacy of the to-date executed research on electromagnetic hypersensitivity
12	Assoc Prof Dariusz Leszczynski	University of Helsinki	Wireless radiation and health: The evidence is not settled yet
13	Dr Erin Mckay	South East Sydney Local Health District	Pixelized Estimation of Tertiary Scatter Intensity for Shielding Assessment
14	Erin McWilliams	ARPANSA	Classification of Radioactive Waste in Australia
15	Erin McWilliams	ARPANSA	The Safety Case for a Radioactive Waste Disposal Facility
16	Rik Nezich	Sir Charles Gairdner Hospital	Recommendations for auditing of dental intraoral bitewing X-ray doses against Local Diagnostic Reference Levels in Western Australia
17	Aithan Roufos	University of Adelaide	Ultraviolet-C Detectors for Ionising Radiation Surveys
18	Zoe Thomas	Monash University	Injuries and adverse effects from cosmetic treatments that use non-ionising radiation
19	Bradley Van Luenen	Queensland Department of Health	Future Radiation Professionals: views of students and current workers on the radiation protection skills shortage
20	Drew Watson	Dept of Health Forensic and Scientific Services	Wipe Tests of Portable Density Moisture Gauges

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# TELLUS

