Australian Government
Australian Radiation Protection and Nuclear Safety Agency

arpansa

Radiation Health and Safety Advisory Council ('Council')

Meeting Minutes

Date: 5–6 March 2019

Time: 12.00 pm – 5.30 pm (Day 1), 9.00 am – 3.00 pm (Day 2)

Location: 619 Lower Plenty Rd, Yallambie VIC (Melbourne)

Chair: Dr Roger Allison

Members: Dr Carl-Magnus Larsson, Dr Hugh Heggie, Mr Keith Baldry, Dr Stephen Newbery, Prof Pam Sykes, Ms Melissa Holzberger, Prof Adele Green, Dr Jane Canestra, Dr Peter Karamoskos, Dr Melanie Taylor.

Apologies: Mr Frank Harris.

Secretariat: Mr James Wheaton, Mr Ben Paritsky.

Invitees: A/Prof Ivan Williams, Mr Jim Scott, Mr Ryan Hemsley, Ms Shailla van Raad, Dr Rick Tinker, Ms Gemma Larkins, Ms Julia Carpenter, Mr John Ward, Dr Peter Thomas, Dr Marcus Grzechnik, Mr Nathan Wahl, Mr Alan Mason, Dr Ken Karipidis, Ms Kathryn Green, Ms Danyel Zalsman, Dr Samir Sarkar, Dr Fiona Charalambous (all from ARPANSA).

1. Standing items

Item 1.1 Meeting open, appoint temporary Chair, and review action list

The Chair opened the meeting and welcomed Dr Peter Karamoskos, recently appointed to Council as the member to represent the interests of the general public.

Item 1.2 Declarations of interests

Council received a summary of the declarations of interest requirements for members required under the *Australian Radiation Protection and Nuclear Safety Act 1998* and the Australian Radiation Protection and Nuclear Safety Regulations 2018 (ARPANS Regulations). One member declared a new standing interest in Silex Systems Limited. It was noted that ARPANSA will coordinate delivery of member declarations to the Minister, including upon appointment, via consolidated ministerial briefs.

Action: Update the Roles and Expectations of Advisory Bodies document with disclosure processes.

Item 1.3 Review of Action List

An updated Action List was circulated and displayed. It was proposed to defer the outstanding item 'Data use and digital strategy working group – draft digital strategy roadmap' until a future Council meeting following the confirmation of member appointments beyond 31 March 2019 when several terms expire.

Item 1.4 Updates on Council re-appointment process

The CEO of ARPANSA noted the recent Council appointments process and ARPANSA's desire to have a full and continuing Council including with the current members. The CEO also noted the current process for appointments is ongoing given several members' terms expire on 31 March 2019. It was noted that the anticipated caretaker period for an upcoming federal election may temporarily delay this process.

Item 1.5 Updates from the Radiation Health Committee (RHC) and Nuclear Safety Committee (NSC)

The CEO of ARPANSA noted that the RHC is focussed on national uniformity issues including, in particular, the outcomes and recommendations from the final report of the International Atomic Energy Agency's (IAEA's) Integrated Regulatory Review Services (IRRS) Mission to Australia in 2018. The RHC, scheduled to meet the next week, is also considering a range of codes and standards, the implementation of RHC's strategy on national uniformity, governance arrangements and related issues for national uniformity, and a second edition of the *National Directory for Radiation Protection* (NDRP 2).

The CEO also noted that key issues currently before the NSC include recent events with safety significance at the Australian Nuclear Science and Technology Organisation's (ANSTO's) Lucas Heights facilities, as well as ANSTO Nuclear Medicine (ANM) licencing considerations with regards to the potential transition from 'hot commissioning' to routine operations of the facility.

Item 1.6 CEO update on the activities of ARPANSA

The CEO of ARPANSA provided updates on a range of significant activities at ARPANSA since the previous Council meeting in October 2018, as well as since March 2018 when several Council members' three year terms expired (several member positions were lapsed at the time of the October meeting). It was noted that during this period the ARPANS Regulations 1999 and ARPANS (Licence Charges) Regulations 2000 were remade through the Federal Executive Council and Governor General, ahead of their anticipated 'sunsetting' in 2019.

Recent media attention about radioactive waste in Malaysia was described, noting that ARPANSA would be the relevant authority to make a decision in regard to import of such material, should any application be submitted. The Department of Foreign Affairs and Trade (DFAT) is the lead Commonwealth agency for any enquiries at this stage.

It was also noted that ARPANSA (along with the Australasian Radiation Protection Society) is hosting the 5th International Symposium of the International Commission on Radiation Protection (ICRP) in Adelaide this year from 19-21 November 2019. The theme is *Mines, Medicine, Mars* with the new Australian Space Agency expressing interest in participating.

Financial Services Royal Commission recommendations with regard to relevant government regulators were raised, with regard to regulatory effectiveness. The importance of ensuring that regulatory actions achieve real and durable change was discussed briefly as a key issue for all Commonwealth regulators.

Item 1.6.1 International engagement update

A report of international engagement undertaken in ARPANSA between September 2018 and March 2019 was circulated to members and tabled to complement the advance paper on upcoming meetings or events. The IAEA General Conference was highlighted, noting progress on key bilateral agreements with the Dutch

regulator on replacing research reactors, and the Thai Office of Atoms for Peace (OAP) on cooperation to update Thailand's international obligations and deploy Australia's radiation monitoring network.

Also highlighted were the IAEA Symposium on nuclear and radiological emergencies (a key focus area for ARPANSA in recent years); IRRS Missions to Spain and Indonesia which show Australia's ability to influence and strengthen radiation protection practices around the world; a comparison with the Canadian federalised model of radiation protection and regulation; expanded Australian Clinical Dosimetry Service (ACDS) operations in New Zealand; and attendance at an International Commission on Non-Ionising Radiation Protection (ICNIRP) meeting in Paris.

Council members were interested in what lessons were learned with regard to national uniformity from observing Canada's regulatory system. It was noted that while nuclear safety regulation was well advanced due to the existence of a local nuclear power infrastructure, there were many similar non-nuclear radiation protection issues to Australia, such as radon or medical exposure, with varying regulatory approaches and stakeholders across Canada's federal or provincial jurisdictions. The importance of a nationally consistent approach to regulation was discussed.

The summary of upcoming international meetings and events was tabled without further discussion.

Action: Circulate the Canada travel report when it becomes available.

Item 1.7 Member representing the interests of the general public

Further to earlier discussions regarding government regulators, the member representing the interests of the general public raised potential issues associated with extrinsic motivation, or behaviour that is driven by external rewards, for discussion. Given the example of financial grants for communities that may host a site for the National Radioactive Waste Management Facility proposed by the Department of Industry Innovation and Science (DIIS), Council heard a description of recent research which shows that where there are ethical and moral considerations, providing a further incentive actually undermines the motivation of those targeted with compensation, thereby decreasing support.

Council discussed some examples where communities that were provided with incentives do demonstrate improved support for issues, noting that the compensation was provided within a framework directly targeted at improving the community's understanding or control over the issue at hand.

Item 1.8 ARPANSA public enquiries and media dashboards

ARPANSA provided an update on public and media enquiries received. The upward trend of an increase in public enquires related to 5G technology and related networks has continued. Conversely, public enquires about ultraviolet radiation continue to trend downwards. Council members noted that it would be good to see shorter-term enquiry trends to identify newly emerging issues, rather than 12 month aggregate trends.

The recent holiday period led to a decrease in media enquiries, however it was reported that ARPANSA's media relationships are now increasingly diversified among traditional media outlets, as well as with increased traffic through social media channels, partly due to high interest in guidance on the use of intense-pulsed-light lasers for cosmetic purposes. ARPANSA's recent brain cancer study also received widespread international coverage, becoming the fourth most-read publication for 2018 on *British Medical Journal Open* despite only being published in December 2018.

2. Briefs for Council

Briefs on various issues were provided to Council given the number of members whose appointed terms were lapsed at the time of the October 2018 meeting and at other key points throughout the year.

Item 2.1 Ultraviolet radiation

Ultraviolet (UV) radiation protection was a major topic of discussion when the full Council met in March 2018, and it was noted that ARPANSA had subsequently published its strategy for UV protection. The strategy has a number of promotion and public health initiatives.

The promotion initiatives include greater links with the Bureau of Meteorology, Cancer Council Victoria (CCV), the ICNIRP, and Standards Australia. The public health initiatives also include a request to the Australian Bureau of Statistics about the continuation of Cancer Australia's national sun protection survey from 2020 onwards, and expanding ARPANSA's UV detector network. Other initiatives include making 10 years of historical UV data available to all researches via data.gov.au and redesigning the trademarked ARPANSA branded swing-tags for various materials (such as clothing, shade cloths and sunglasses) that the Agency tests for sun protection effectiveness.

Public health initiatives include direct research such as the development of a lab-based sunscreen testing method in conjunction with RMIT, working with CCV on the impact of a full UV index and behaviour change, and working on research with QIMR-Berghofer and Qantas on melanoma rates for commercial pilots.

Council also raised the issue of eye-health, beyond existing sunglasses testing activities, noting that there is still a lack of basic knowledge and data for UV-related eye damage, including for pilots (such as cataracts). It was noted that this area of radiation needs to remain a priority for ARPANSA and broader Government, because the realised risk from UV radiation is almost greater than any other radiation issue that ARPANSA deals with. Investment in communication would raise public awareness, as a key safety issue for the public.

Council noted that future discussions on UV protection may benefit from inviting persons with expertise in the psychology of behaviour change, noting the challenges of social trends and views such as sunscreen as an environmental pollutant, highlighting the need to revisit established sun protection approaches or messaging.

Item 2.2 IAEA IRRS Mission

An overview of Australia's recent IRRS Mission was presented along with a summary of the outcomes and recommendations from the final report. Members noted that the report outcomes were a good result for ARPANSA's effort, and presented the possibility to progress various issues such as national uniformity. The concept of equivalent standard of protection was highlighted as important, and Council noted that systemic change would not likely be achieved with simply a renewed effort through existing governance structures, which face unchanged historical pressures and challenges. It was noted that the recommendations are currently under consideration by the various Australian governments, with a view to determining where accountabilities would lie for implementing changes. It was suggested that, in order to gain traction at key decision making bodies, it would be useful to present the recommendations along with itemised activities or remedies to fix the issues identified. That way decision makers will not need to work to a blank slate, and it will help them to have a structure to work with, even if they turn down certain suggestions.

Item 2.3 ARPANS Act / EPBC Act approval processes

ARPANSA presented an overview of discussions with the Department of the Environment and Energy (DOEE) regarding any interactions between the two separate approval processes (ARPANSA and DOEE) at different stages of DIIS's proposed National Radioactive Waste Management Facility (NRWMF). Council noted its previous advice on the NRWMF and the importance of ARPANSA maintaining independence in order to maintain public confidence in the regulator.

Item 2.4 Naturally Occuring Radioactive Material (NORM) issues being considered

Council was provided with an update on issues related to NORM that were discussed at the previous meeting without all of the current members present. When sources of NORM are processed, by-product or waste streams can have concentrated radioactive materials. Exposure to these materials can cause a hazard for occupational health and the environment. The types of exposures are managed under various arrangements, under a very complicated system with no single approach available.

There is a general lack of clarity for both operators and regulators on how to apply regulation or a graded approach to NORM management. This is an international issue, and there is potential for industry to develop a code of practice, noting that the issue is of particular relevance to and would benefit from guidance for the oil and gas industry. It was noted that Council previously agreed to engage with the Radiation Health Committee (RHC) and a temporary working group had been established.

Item 2.5 Update on ANSTO events

Council was given a further update on the status of regulatory oversight for recent safety-related events at ANSTO Health's facility in Lucas Heights, New South Wales. Council members sought to know whether the ANSTO board specifically had expressed recognition of the safety issues identified, by taking ownership, or had been questioned directly as part of the independent review. This was identified as key to ensuring effective and lasting rectification actions and addressing any potential safety culture issues.

Council discussed the effectiveness of ARPANSA's regulatory function in the context of the safety-related events at ANSTO Health. Members stressed the importance of ARPANSA being an effective regulator, noting the risk of multiple minor recommendations and minor reactive remedies risks masking a lack of any structural change required to address safety.

3. Deep dive

Item 3.1 Safety Culture Maturity Assessment

ARPANSA presented its model for measuring the maturity of the agency's internal safety culture. It was noted that the model was drawn from international best practice and is being trialled internally to assess the Regulatory Services Branch initially, with the intention that it will soon be used to assess the whole agency. This activity is being called a Safety Culture Maturity Assessment and it was noted that the resulting report will be published on ARPANSA's website so that it is available publicly for transparency.

Council discussed that, where statistical anonymity is adequate, there would be value in the assessment of organisational leaders being separated discretely in the findings, to compare how an organisation's leadership differs in its view of safety from that of its workers. It was noted that ARPANSA's regulatory branch was too small to separate leadership views and maintain appropriate anonymity in this trial.

Item 3.2 Draft Medical Exposure Code (RPS C-5)

Council noted that the draft *Medical Exposure Code, Radiation Protection Series* (RPS C-5) is set to go to the RHC for endorsement. Members discussed the wording with regard to referrals, as well as the definition of medical physicists as an occupational category.

Action: Council recommended the CEO to adopt the Code, subject to RHC approval with only minor and non-contentious amendments.

4. Quick reviews

Item 4.1 Guide for Radiation Protection in Emergency Exposure Protection (RPS G-3)

The *Emergency Exposure Guide* (RPS G-3) was tabled for discussion. Members discussed the definition of stochastic effects, including whether there is evidence for hereditary effects and possible effects below the 50 mSv limit set in the guide. Members also suggested avenues for collaboration on emergency exercises through the national counter-terrorism committee and national CBRN security sub-group, to enable such activities to filter through to jurisdictions' plans and arrangements.

Action: Council recommended the CEO to adopt the guide subject to consideration of the comments and RHC approval.

Item 4.2 ARPANSA Advisory Note for Dose and Risk Criteria – closure of waste disposal facility

ARPANSA presented on the above advisory note and sought feedback from the Council. Members discussed the target audience and how decisions would be recorded as part of the regulatory licensing process for posterity, also noting that the diagram was useful from a non-technical standpoint although it could be clearer for detailed concepts. ARPANSA noted that further feedback is welcome as the draft develops.

Item 4.3 GovTeams (replacement for Govdex)

Council was introduced to the new GovTeams platform for collaboration across Commonwealth Government, which will be used for Council matters going forward.

5. Deep dive

Item 5.1 Radiation Protection of Medical Personnel (RPOMP)

ARPANSA presented its revised RPOMP training package, noting initial feedback from medical radiation professionals was that it would be of very good value. Council discussed the benefit of potentially collecting de-identified data as more people complete the training to see what myths or misconceptions persist or may be decreasing within certain industries and occupations (e.g. nursing), due to the training. ARPANSA agreed that this may form part of the future direction of the product, as feedback data systems are possible to incorporate, and given that large private users have expressed interest in co-development opportunities.

Some members noted that not everyone overestimates the risks of radiation, so collecting data would be a good starting point to identify how useful the program would be, and how well it cuts through as an educational tool. Verification of training outcomes such as through in-house systems was discussed as

being important from an employee management and compliance perspective. Members felt that there is no overarching fear of radiation, rather just insufficient knowledge about radiation, in occupational medical applications.

Members also advised that this tool could be shared with other staff at health facilities or students, noting that people do not need to be qualified health professionals in order to benefit from this training. Although broadly commendable of the 'open-source' approach to the modular style development of this product and intellectual property, some members expressed concern that customisation by other organisations may pose a risk to quality and the ARPANSA brand through shared or lost intellectual property.

A question was also raised about whether collaboration with the medical sector could somehow restrict the availability of this tool for the mining sector, with a suggestion of a future where modules are added for each code that ARPANSA publishes (such as transport or emergency preparedness). It was noted that the product is in the early stages of development, but the analysis of impact (data) is very important because there is not often an opportunity to understand what is happening nationally, and it would be highly beneficial if this model could be expanded so that others can innovate on ways to deploy the knowledge.

6. Deep dive

Item 6.1 Opening and naming of ARPANSA's new medical linear accelerator and training centre

Council members attended the opening and naming of ARPANSA's new medical linear accelerator (linac) and associated training centre, which was named the Roger Allison Radiotherapy Quality Centre in order to recognise the substantial contribution to radiation therapy and to ARPANSA over many years of Dr Roger Allison, the Chair of Council. The commitment, time and efforts of Dr Allison have benefited ARPANSA and the Australian public in radiation protection, particularly in radiotherapy for cancer treatment, in a manner that cannot be overestimated.

7. Quick reviews

Item 7.1 ARPANSA mobile phone brain cancer study

ARPANSA presented on an ARPANSA-led Australian study entitled *Mobile Phone use and incidence of brain tumour histological types, grading or anatomical location: A population-based ecological study* published in December 2018 with the British Medical Journal Open. The study found no link between the use of mobile phones in Australia and incidence of brain cancers. Council members commented that it was an overall useful paper and congratulated the authors.

Item 7.2 Electromagnetic Energy / 5G technology

ARPANSA delivered a presentation on electromagnetic energy (EME) in the ranges where 5G technology is expected to be deployed that is, frequencies higher than 6 GHz. At these frequencies, the depth of penetration of RF EME in tissue is relatively short (less than 8 mm) and any effects would therefore be restricted to the skin or eyes. However, currently there is no evidence that there are any effects at the power levels anticipated to be used by the technology. Not a lot of applied research has been conducted yet on the specific technology, although there is research on the relevant frequency range. Extensive animal studies were done in 60s and 70s and there are many examples of existing technology that already use these frequencies, such as walk-through airport security scanners and speed-detection radar.

Even though no adverse health effects are expected, ARPANSA still believes it is important to measure the real radiofrequency levels in the environment. ARPANSA's equipment currently doesn't measure radio waves at the high frequencies to be utilised by 5G. The Radio Frequency National Site Archive website (www.rfnsa.com.au) administered by industry will also need to be updated, with a significant increase in the number of base stations likely to cause public anxiety (already evident through enquiries ARPANSA receives), making risk communication an important exercise.

Item 7.3 Scientific and technical knowledge and skills framework

ARPANSA presented on its evolving framework for managing scientific and technical knowledge and skills within the agency. Given the excellent current state of base-material, members suggested voiceovers could be added to training materials, and the concept of journal clubs which encourage small-group learning as a regular part of workplace culture could be considered.

Members highlighted the importance of storytelling and 'why it matters' as key to learning technical concepts, including historical examples. A real depth of learning is found in trying to achieve a tangible experience that people take away, so that knowledge gets translated in the 'doing'. Pairing learning with future significant tasks, so that new people gain experience and develop their own 'story' is important.

It was also noted that there may be an opportunity for this learning to reach beyond ARPANSA to other regulators, perhaps through pairing safety and training to achieve two things at once. It was noted that self-testing and gamification are worth considering in approaches to in-house learning, however members also suggested there may be an opportunity to explore locally with a university to co-develop short courses for 'micro-credentialing' which can also be sold to students as well as industry. Alternatively, the modular structure of the RPOMP model (mentioned above) could be the platform for co-development with industry.

Item 7.4 Draft Transport Code

Council noted that ARPANSA proposes to publish a revised *Code for the Safe Transport of Radioactive Material, Radiation Protection Series C-2*, in March 2019. It was also noted that the changes are expected to have little or no cost to industry.

Action: Council recommended the CEO to adopt the code, subject to RHC approval.

8. New items to consider

Item 8.1 Members' suggestions

Members requested a progress report at the next meeting on the implementation, via the national action plan, of recommendations from the International Atomic Energy Agency's Integrated Regulatory Review Service Mission to Australia in November 2018.

Members also requested ongoing updates on actions taken by the Australian Nuclear Science and Technology Organisation (ANSTO) in response to safety concerns, and a separate possible focus on dose as well as workplace culture to ensure demonstration of judicious use and respect for radiation for all facilities that use radiation, such as in diagnostic imaging.

Finally, public preparedness for emergency situations could also be considered dependent upon ARPANSA's progress with its own internal strategy and guidance.

Item 8.2 Items in collaboration with the NSC and RHC

It was noted that the Chair of Council had written to the Chair of the RHC, to invite their advice on which industries, sectors and points of regulatory contact may be relevant for the consideration of NORM issues. The RHC had also been invited to assist Council to develop guidance or a statement of position on a 'graded approach' to best practice regulation of NORM activities in Australia.

Item 8.3 Items flagged for next meeting

It was noted that a follow-up discussion to the special session on ultraviolet radiation protection could be scheduled for the next meeting, Members noted that UVR protection is a major public health concern, with major issues in the areas of data capture for incidence rates, challenges for organ transplant recipients, coordinated messaging, and particularly behavioural change.

Item 8.4 Future topics ARPANSA may bring to Council

The CEO of ARPANSA provided a summary of topics that ARPANSA may bring to Council to consider, including issues around intense pulsed light (IPLs) and cosmetic lasers, and ARPANSA's risk management approach to radiation with a focus on risk communication.

9. Other business

Item 9.1 Review action items from this meeting

The action items from this meeting were reviewed.

Item 9.2 Review schedule items for next meeting

Items for the next meeting were taken as read.

Item 9.3 Upcoming meetings – locations and dates

The dates of meetings for the remainder of 2019 are to be determined out-of-session.

Action: Secretariat to circulate proposed dates to members.