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IRPA Bulletin

For RP professionals, by RP professionals



In this issue:

	UPDATES ON IRPA15	- 2
ICRP'S 5TH INTERNATIONAL SYMPOSIUM ON THE SYSTEM OF RADIOLOGICAL PROTECTION		- 3
	THE 9TH INTERNATIONAL NIR WORKSHOP	- 3
	HORIZON SCAN UPDATE: RN DOSE COEFFICIENTS	- 4
	ITALIAN RADIATION PROTECTION ASSOCIATION	- 5
	JOINT JHPS-SRP-KARP WORKSHOP OF YOUNG GENERATION NETWORK	- 6
	INCREASING AWARENESS ABOUT EXPOSURE OF THE LENS OF THE EYE	- 7
INTERNATIONAL CONFERENCE ON RADIATION SAFETY:IMPROVING RADIATION PROTECTION IN PRACTICE		- 8

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UPDATES ON IRPA15 (SUNNY KIM, IRPA15 SECRETARIAT, DECEMBER 2019)

Believe it or not, the IRPA15 is only four months away! From the Secretariat, we are delighted to provide you an update on the progresses that we have made during the past months and wish you all a wonderful holiday season!

The International Congress Programme Committee (ICPC) has finalized the Plenary Sessions, with presentations from a list of world's top experts on various topics:

1. The Sievert Lecture - Eliseo Vano, Hospital Ntra. Sra. Del Rosario, Spain
2. Health Effects and Inference of Risks Due to Radiation Exposure - Peter Jacob, Helmholtz Zentrum München, Germany
3. The Future of the System of Radiological Protection - Roger Coates, IRPA; Claire Cousins ICRP; Maria Perez, WHO; Uhm Jaesik, NSSC
4. Radiation Protection Culture - Helen Rycraft, IAEA; Bernard Le Guen, IRPA
5. Non-ionising Radiation: Developing the System of Protection - Eric Van Rongen, ICNIRP; Emilie van Deventer, WHO
6. Public Understanding and Communication - Vincent T. Covello, Center for Risk Communication, USA
7. Fukushima: Radiation Risk and Public Health - Gillian Hirth, UNSCEAR; Kenji Kamiya Fukushima Medical University, Japan
8. Ethics - Deborah Helen Oughton, Norwegian University of Life Sciences; Kun-Woo Cho, Korean Institute of Nuclear Science

A few important deadlines:

- Notifications of Oral abstracts acceptance will be made on 31 December 2019;
- Poster presentation abstract submission will be closed on 31 December 2019;
- Deadline for Early Registration is 14 February 2020.

For sightseeing and tour, please visit the congress website www.irpa2020.org and plan early!

IRPA15 welcomes companies and associations to become exhibitors and sponsors of the congress. We are very happy to assist you in making IRPA15 a great opportunity to promote your companies and associations to participants from all around the globe.

IRPA15 is running social network channels on Facebook, Twitter and YouTube where congress information and news will be updated frequently. Please share your news with colleagues and follow and like IRPA15 pages.



11-15 May 2020 | COEX, Seoul, Korea



Bridging Radiation Protection Culture and Science -
Widening Public Empathy



ICRP'S 5TH INTERNATIONAL SYMPOSIUM ON THE SYSTEM OF RADIOLOGICAL PROTECTION

(CHRISTOPHER CLEMENT, IRPA PUBLICATIONS DIRECTOR)

On 17-21 November 2019, ICRP held its 5th International Symposium on the System of Radiological Protection. It was hosted by the Australasian RP Society (ARPS) and the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) in Adelaide, Australia. Attracting more than 400 people from around the world, the event began with an ARPS Forum covering a wide variety of topics including: Future Challenges, NORM and Natural Radiation, Radiation Biology and Protection, Aviation and Beyond, Nuclear Facilities and Training, and Radiation Effects.

The ICRP Symposium programme focused on three key areas “MINES”, “MEDICINE” and “MARS”: Mining and Other Natural Sources, Radiological Protection Challenges in Cutting-Edge Medicine, and Radiological Protection in Space. Each was anchored by a keynote talk, from: Paul Cuthbert, General Manager, Mines at BHP; Brendan Murphy, Chief Medical Officer of Australia; and, Robert Thirsk, an astronaut from the Canadian Space Agency.

During the opening session, ICRP Chair Claire Cousins presented the Bo Lindell Medal for Promotion of Radiological Protection to Dr Elizabeth Ainsbury (PHE, UK), who then spoke on “Interdisciplinary radiation protection research in support of medical uses of ionising radiation”.

ICRP will publish proceedings of the Symposium, which will be immediately free to access thanks to the support of BMU, and will also release videos of the Symposium presentations through its website.

ICRP's next International Symposium will be held in Vancouver, Canada, 1-5 November 2021 (see www.icrp2021.com).

THE 9TH INTERNATIONAL NIR WORKSHOP

(KARINE CHABREL, ICNIRP)

The International Commission on Non-Ionizing Radiation Protection (ICNIRP) is holding its 9th International NIR Workshop at the ECC, Ewha Womans University in Seoul, Korea, 7-8 May 2020. With the contribution of all ICNIRP members and scientists from the major Korean institutes engaged in NIR research, you will get a comprehensive overview of the newest scientific developments in NIR and the current advice in radiation protection, in particular, in relation to exposure to electromagnetic fields. As an introduction, the NIR workshop will provide participants with a round about of the main international actors in radiation protection and how they view their different roles in the international protection frame. The three further sessions will be devoted to health protection in the RF, ELF and optical ranges, including topics related to the upcoming NTP validation animal study in Korea, RF cancer epidemiology, mobile phone safety, wireless power transmission, environmental issues related to ELF, and LED safety. The update of the ICNIRP Radio Frequency Guidelines expected for publication at the End of 2019/Start of 2020 will be one of the main foci of the workshop. Program, Registration, Poster and Early Career Award: all information are available at <https://www.icnirp.org/en/workshops/article/workshop-nir2020.html>



HORIZON SCAN UPDATE: RN DOSE COEFFICIENTS

(ANALÍA CANOBA, ARGENTINE RADIATION PROTECTION SOCIETY)

Dose coefficients for radon and progeny were historically calculated using the dose conversion convention which is based on nominal values of radiation detriment derived from epidemiological studies comparing risks from radon and external radiation. This approach was stated in ICRP Publication 65.

Following ICRP 2007 Recommendations, the Commission published revised dose coefficients for the inhalation of radon gas in its Publication 137 Part 3. The Commission proposed the same approach to be applied for radon and its progeny as it is done for other radionuclides, using biokinetic and dosimetric models. The change resulted in an increase in effective dose per unit exposure of a factor of two and even more in the cases of specific exposures such as tourist caves.

Moreover, the Commission has reviewed available scientific information on the health effects due to exposure to radon and its decay products. As a result of this review, for radiological protection purposes the Commission recommends a detriment-adjusted nominal risk coefficient for a population of all ages of 5×10^{-4} WLM⁻¹ for exposure to radon-222 gas in equilibrium with its progeny.

On the other hand, UNSCEAR's report approved at its Session 66 meeting (10-14 June 2019) states that due to the uncertainties from both dosimetric and epidemiological studies, this gives rise to a broad range of risk estimates and concluded that values from the current dosimetry and epidemiological reviews are consistent with those used in previous UNSCEAR reports, therefore, concluding that there is no reason to change the established dose conversion factor.

Based on this new development, the IAEA held an expert meeting to seek the advice of experts on the potential implication of the ICRP recommendations on BSS requirements. The experts concluded that there is no immediate need to change the relevant radiation protection requirements in the BSS. They also recommended that the IAEA and the organizations that co-sponsor the BSS develop a position paper on the use of dose conversion factors for radiation protection.

Member states need this important issue to be clarified in order to apply the most appropriate radiation protection requirements to the control of radon gas exposure.



ITALIAN RADIATION PROTECTION ASSOCIATION

(MAURO MAGNONI, AIRP PRESIDENT)

The Italian Radiation Protection Association (AIRP) was founded in 1958. It is one of the founding members of IRPA and hosted the first International IRPA Congress in 1966 in Rome. Since that time, its activity has been devoted to the spreading of radiation protection culture and knowledge among professionals and the public through organizing scientific meetings, seminars and events dealing with all the most relevant radiation protection issues. It is a non-profit organization whose members come from universities, regulators, medical field, and industries, including individuals and organizations.

Education and raising cultural awareness on radiation protection among professionals and young scientists were, from the beginning, the main areas of interest of AIRP. Two significant activities are worth to mention: (1) The “Carlo Polvani Radioprotection High School”, established in 1984 as a permanent AIRP body in order to spread the basic radiation protection principles as well as the new scientific advancements in all the radiation protection fields, has organized 59 courses, which were attended by hundreds of students and professionals; (2) The translation in the Italian language of the most relevant radiation protection publications (ICRP Recommendations, WHO Reports, etc.) is another important AIRP activity.

AIRP organizes several scientific meetings each year. The annual AIRP Congress, usually held in autumn, is a three-day meeting with scientific sessions that spans all the most challenging and current radiation protection issues. In 2019 several topical meetings were organized or co-organized by AIRP, with the most important being the VII National Congress on Physical Agents, held in Stresa, Maggiore Lake from 5-7 June, in collaboration with the Environmental Protection Agency of Piemonte.

The 2019 AIRP Annual National Congress was held in Perugia, 16-18 October, focusing on the justification and optimisation principles. A specific session of the Congress was devoted to the discussions of the results of an non-ionizing radiation intercomparison exercise recently held in Turin, where 16 teams were tested for their capabilities to perform precise and reliable measurements of the EMFs emitted by 5G antennas. At the Congress, the AIRP Young Professional Award was awarded to a young researcher who presented the best original work at the Congress. In addition, two other smaller meetings were organized: (1) A one-day seminar on remediation technologies and approaches for contaminated sites and environments in Ferrara on 19 September during the Remtech Exhibition (18-20 September), one of the most important national events on restoring of contaminated environments; and (2) A seminar on cosmic rays exposure on 20 September in Pozzuoli, hosted by the Pozzuoli Air Force Academy.

In the fall of 2019, AIRP in collaboration with the Italian Ionizing Radiation Metrological Institute (ENEA-INMRI) organized the third radon intercomparison exercise for passive radon detector, which was open to all the laboratories interested in testing their skills in real exposure environments. A total number of 80 laboratories subscribed: 55 from Italy and 25 from other countries. An international workshop as final meeting for the discussion of the intercomparison results is scheduled for September 2020 in Rome.



JOINT JHPS-SRP-KARP WORKSHOP OF YOUNG GENERATION NETWORK

(AKIHIRO SAKODA, SEIKO HIROTA, TAKAHIKO KONO, NORIAKI KATAOKA (JHPS))

The Joint JHPS-SRP-KARP Workshop of Young Generation Network (YGN) was held in Sendai, Japan on December 4, 2019, in conjunction with the joint annual meeting of JHPS and JRSM (Japanese Society of Radiation Safety Management). On the day before the workshop, a technical tour to Fukushima Dai-ichi Nuclear Power Station was also conducted. The beginning of the story for having the present workshop was the successful Joint KARP-JHPS Workshop of YGN held last year in Jeju, Korea (see IRPA Bulletin No. 20); subsequently, SRP represented joining there.

The workshop commenced with opening remarks by A. Sakoda (JHPS) and P. Bryant (SRP). In the morning session “IRPA YGN Session”, 5 representatives of national YGNs working under IRPA’s Associate Societies (JHPS, SRP, KARP, SFRP, and CFRP) shared their activities and plans, and then all participants freely discussed some current and future issues in radiation protection and its allied field. In the afternoon session “Technical Session”, 22 young professionals and students presented their researches with a variety of topics such as environmental radioactivity, radiation measurement and simulation, radiation protection and regulation, radiochemical analysis, emergency monitoring, radiation application, and communication. Finally, the best presentation award went to N. Kataoka from Japan (Title: Surface treatment for shell egg by low energy electron beam) and E.W. Katengeza from Malawi (A brief scrutiny of Malawi’s development agenda of vis-à-vis status of atomic regulatory infrastructure). The workshop was concluded with closing remarks from W.H. Ha (KARP) and R. Coates (IRPA).

Obviously, main players of this workshop were young professionals and students, but some inputs from senior, experienced participants fueled the discussion in a positive way. The photograph may indicate how fantastic the interaction was among them. We hope that the discussion and networking gained here can give a boost to the success of IRPA 15 as well as the future of the radiation protection profession.



(78 professionals and students joined this workshop from 13 countries: Australia, Bangladesh, Cameroon, China, France, India, Indonesia, Japan, Korea, Malawi, Thailand, UK, and Vietnam)

INCREASING AWARENESS ABOUT EXPOSURE OF THE LENS OF THE EYE

(MARIE-CLAIRE CANTONE, IRPA EC MEMBER)



The IRPA Task Group on the Implementation of the Eye Lens Dose Limits 1) launched the 3rd survey in 2019 to promote a wide exchange of experiences at an international level and to evidence the approaches to the assessment of eye dose emerging in the RP community eight years after the ICRP recommendation on the new dose limit for the lens of the eye. In 2019, a significant number of reports have been published on various aspects related to the exposure of the lens of the eye.

The mechanism of IR-induced cataract is not completely known, even if several mechanisms are considered in view of a combination of processes with contributory roles:

- The likely importance of dose-rate effects in low-dose cataract formation is presented together with the evidence that lens epithelial cells and lymphocytes respond differently to dose-rate 2) in terms of DNA damage repair;
- A cell population model for human lens growth is prepared together with a simulation model for spontaneous and for IR-cataractogenesis to reproduce the human cataract data. This approach can serve as the basis for the development of a risk-predictive model 3).

Regarding the dose to lens of the eye, a number of studies related to the medical field and in particular to the interventional procedures have been published:

- Considering the significant influence of radiologist's head posture on eye lens dose in interventional radiology 4), a computational human phantom with a high-resolution eye model is used to simulate personal behavior and eye lens dose, by using Monte Carlo code;
- Endovascular aneurysm repair, renal angioplasty, iliac angioplasty and bile duct stenting and drainage, are considered to have potential to impact skin, thyroid, eye lens 5);
- In specific procedures like embolization 6) studies analysis of the dose evaluation and optimization of the protection of patient and members of the medical team, are discussed together with aspects of dosimeter choice and position;
- To adapt the radiation protection education and training and to raise awareness on reducing the radiation risk for the eye lens, monitoring plans for workers involved in X-ray-guided procedures, are launched to have a view of the status of knowledge 7) ;
- In the veterinary area, it is indicated that protective screen, especially for the eye, should be worn by veterinary radiology workers 8) who use both fluoroscopy and digital radiography.

In the context of the Committee on Radiological Protection and Public Health (CRPPH), of the OECD Nuclear Energy Agency (NEA), a dedicated Expert Group on the Dose Limit for the Lens of the Eye (EDLE) 9), was created. The main objective of the EGDLE, starting its activity in July 2019, is to provide an opportunity for regulators and stakeholders to share lesson learned in the practical implementation of the dose limit for the lens of the eye for occupational exposures.

List of links related to the text

1) IRPA: web on organization, where task groups are included
http://www.irpa.net/group_list.asp

2) UK: Inverse dose-rate effect of ionising radiation on residual 53BP1 foci in the eye lens
<https://www.nature.com/articles/s41598-019-46893-3.pdf>

3) Japan: A biologically based mathematical model for spontaneous and ionizing radiation Cataractogenesis
<https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0221579&type=printable>

4) USA: Influences of operator head posture and protective eyewear on eye lens doses in interventional radiology: A Monte Carlo Study
<https://aapm.onlinelibrary.wiley.com/doi/abs/10.1002/mp.13528>

5) Nigeria: Radiographic Assessment of Protective Aprons and Dose Simulation to Personnel
http://www.journalrcr.org/temp/JRadiatCancerRes102117-4823139_132351.pdf

6) Brazil: A Study of Radiation Doses to the Patient and Medical Team at Embolization Procedures
<http://jrpr.org/upload/pdf/jrpr-44-3-110.pdf>

7) Italy: New Eye Lens Dose Limit: Status of Knowledge in Campania Hospital
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6765950/pdf/ijerph-16-03450.pdf>

8) Korea: Evaluation of radiation exposure from fluoroscopic examination in small animal veterinary staff using thermoluminescent dosimeters
https://www.agriculturejournals.cz/publicFiles/141_2018-VETMED.pdf

9) OECD- NEA: EGDLE mandate
https://www.oecd-nea.org/tools/mandates/index/id/7972/lang/en_gb



INTERNATIONAL CONFERENCE ON RADIATION SAFETY: IMPROVING RADIATION PROTECTION IN PRACTICE

(SIGURÐUR M MAGNÚSSON, IRPA EC, PROGRAMME COMMITTEE CHAIR;
TONY COLGAN, IAEA, SCIENTIFIC SECRETARY)

The International Atomic Energy Agency (IAEA) is organizing the International Conference on Radiation Safety: Improving Radiation Protection in Practice at its headquarters in Vienna, Austria, from 9 to 13 November 2020.

The Conference will identify the key challenges in radiation protection that need to be addressed by the international community, as well as possible solutions.

It will provide a forum for the sharing of experiences in applying the system of radiological protection, as provided for in the IAEA safety standards, to the protection of workers, patients, the public and the environment. Discussions will focus on the radiological protection system's basic principles and concepts as well as new scientific knowledge and new challenges.

The IAEA is organizing the conference in cooperation with the European Commission, the Food and Agriculture Organization of the United Nations (FAO), the International Labour Organization (ILO), the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development, the Pan American Health Organization (PAHO), the United Nations Environment Programme (UNEP) and the World Health Organization (WHO).

The Conference's scope includes both natural and artificial radiation sources. Conference sessions will cover all exposure situations and the three basic principles of radiological protection: justification, optimization and dose limitation.

The Conference will bring together regulators, researchers, operators and other radiation protection professionals.

Further information can be found on the conference web page:

<https://www.iaea.org/events/international-conference-on-radiation-safety-2020>