

ICRP

2018 Annual Report

Established in Stockholm 27 July 1928
Guiding Radiological Protection for 90 years



ICRP 2018 Annual Report
ICRP Reference Number 4835-2763-1011
29 August 2019
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Chair's Forward

2018 was a milestone year for ICRP as we celebrated our 90th anniversary. The International X-Ray and Radium Protection Committee (IXRPC) was formed in 1928 at the second International Congress of Radiology in Stockholm, Sweden. After World War II, the IXRPC was re-established and, in 1950, was given its current name, the International Commission on Radiological Protection (ICRP).

We set an important goal for our anniversary, that is the Free the Annals initiative that I announced at ICRP-ERPW 2017. To do so, we needed to raise € 500 000 to ensure that all publications, except those from the most recent two years, would become free to access for anyone around the world. This significant, permanent change will have immediate and positive impact for industry, policy makers, governments, professionals, and the general public. It is with great pride that I confirm the success of this ground breaking campaign. At the end of 2019, all issues of Annals of the ICRP up to and including 2017 will be free to download. At the end of 2020, everything published in 2018 and earlier will be free, and so on, on an indefinite basis.

The system of radiological protection has never been so easily available to anyone who requires it. This could not have been possible without the support of the government agencies, societies, associations, organisations, and individuals from around the world who all helped us to make a change for the better. A special thank you goes to the United States Department of Energy (DOE), the Federal Authority for Nuclear Regulation (FANR, UAE), the United States Environmental Protection Agency (EPA), and the Chinese Institute for Radiation Protection (CIRP) for their generous contributions that have enabled this goal to come to fruition.

In October 2018, ICRP returned to Stockholm, the place where it all began in 1928, for our 90th anniversary celebrations. I would like to extend my sincerest gratitude to the Swedish Radiation Safety Authority (SSM) for hosting such an historic and stimulating two-day colloquium. It was a pleasure to present the first ICRP Bo Lindell Medal at this event. We were humbled to return to our roots, and now look forward to our centennial in 2028.

In addition to the celebrations and fundraising, our Main Commission, Committees, and Task Groups continued to address the relevant issues in radiological protection. After all, ICRP exists for the public benefit. I am impressed by the on-going dedication and quality of work that the ICRP membership sustains through meetings, consultations, critical peer reviews, and countless hours of time given voluntarily.

Throughout this annual report, you will find more detailed information on all aspects of this foreword. I look forward to welcoming you to ICRP 2019, the 5th International Symposium on the System of Radiological Protection in Adelaide, Australia in November 2019 for "Mines, Medicine, and Mars".



Claire Cousins

Claire Cousins, ICRP Chair

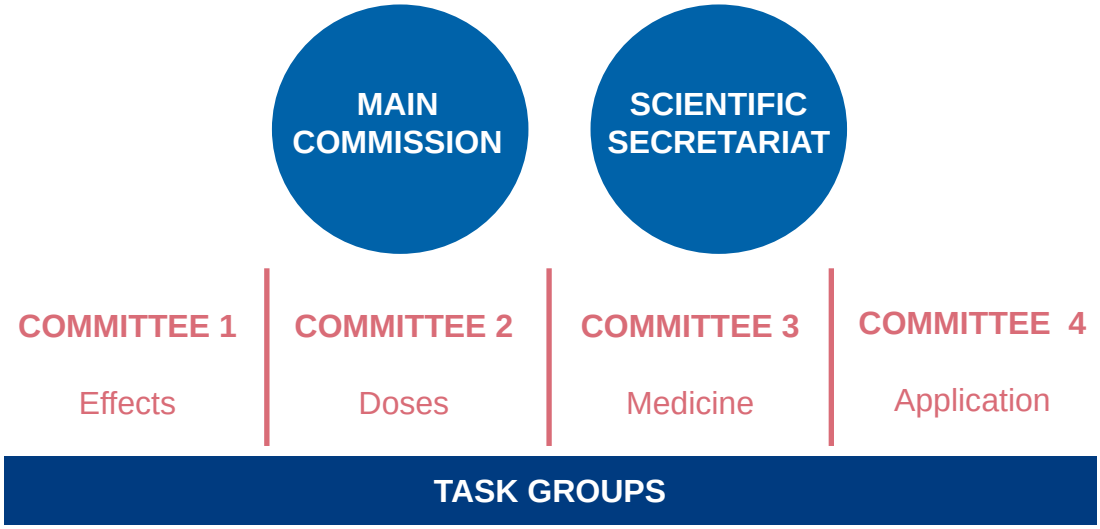
The International Commission on Radiological Protection

ICRP develops the System of Radiological Protection for the public benefit. The System takes account of the latest scientific knowledge, ethical values, and practical experience. It is the basis of standards, legislation, guidance, programmes, and practice worldwide.

The objective of the System is to contribute to an appropriate level of protection for people and the environment against the harmful effects of radiation exposure without unduly limiting the individual or societal benefits of activities involving radiation.

Originally established at the Second International Congress of Radiology in 1928 as the International X-ray and Radium Protection Committee, today ICRP is an independent international charity registered in the UK, relying on financial contributions and support from governments, industry, agencies, and foundations from around the world.

ICRP consists of the Main Commission, the Scientific Secretariat, four standing Committees, and Task Groups established as needed to undertake specific work. Members come from over 30 countries and all disciplines relevant to radiological protection. They are invited to join ICRP as independent experts on a volunteer basis for four-year terms. Representatives of organisations in formal relations with ICRP are regularly invited to both advise the Main Commission and to participate in meetings of the Committees. Individuals from these organisations may be invited to be members of Task Groups or to review drafts of work in progress, where their expertise is particularly relevant.



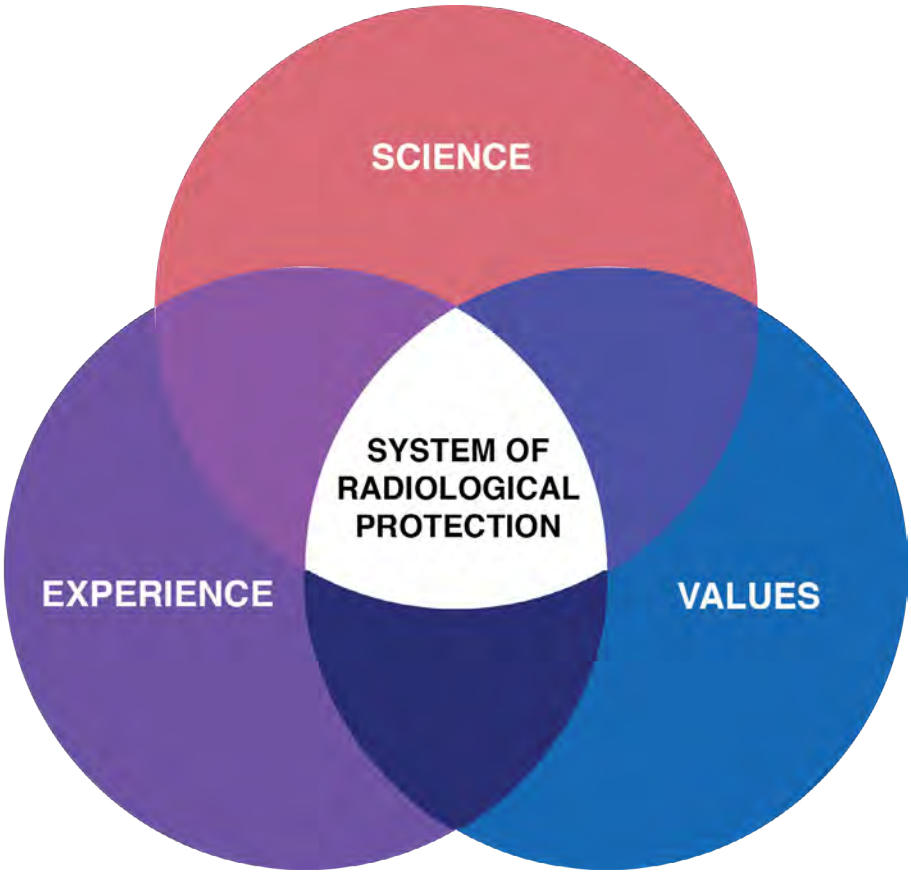
This structure supports a rigorous system of peer review. The work of Task Groups is reviewed by the relevant Committee(s), and then reviewed and approved by the Main Commission. During development, most reports are circulated to a number of organisations and individual experts for critical review, and posted for public consultation through the ICRP website.

The System of Radiological Protection

The System of Radiological Protection is based on the latest science, social and ethical values, and nearly a century of experience.

ICRP recommendations are used world-wide by intergovernmental and non-governmental advisory and standard setting agencies; government health and other regulatory authorities; educational, scientific, and healthcare institutions; operators; individual professionals; and others with an interest in radiological protection.

The IAEA International Basic Safety Standards for Protection against Ionising Radiation and for the Safety of Radiation Sources is based heavily on ICRP recommendations, as are the similar European Basic Safety Standards. The International Labour Organization Convention 115, Radiation Protection Convention, General Observation 2015, refers specifically to the recommendations of ICRP.



The System of Radiological Protection forms the basis of radiological protection standards, regulations, programmes, and practice world-wide.

Main Commission

The Main Commission consists of the Chair and up to twelve other members. The Main Commission is the governing body, setting the policy and programme of work, and approving all official publications.



Back Row (Left to Right): Werner Rühm (Committee 1 Chair, Germany), Donald Cool (Committee 4 Chair, USA), Michiaki Kai (Japan), John Harrison (Committee 2 Chair, United Kingdom), Dominique Laurier (France), Kunwoo Cho (South Korea), Simon Bouffler (United Kingdom)

Front Row (Left to Right): Sergey Romanov (Russian Federation), Christopher Clement (Scientific Secretary*, Canada), Claire Cousins (Chair, United Kingdom), Jacques Lochard (Vice-Chair, France), Kimberly Applegate (Committee 3 Chair, USA)

Not Pictured: Carl-Magnus Larsson (Australia), Senlin Liu (China)

The Scientific Secretary has not been a Main Commission member since 1988, but continues to be integral to the work of the Main Commission, often serving as the representative of ICRP.

Formally, the 'Main Commission' is ICRP, providing overall direction and oversight to the larger organisation. The members are also the trustees of ICRP as a registered charity.

The Main Commission sets the programme of work, and approves all publications. On 1 January 2017, ICRP began operating as a Charitable Incorporated Organisation, a modern and robust legal structure, while remaining a Charity registered with the Charity Commission of England and Wales.

In the Commission's first meeting in 2018, held in Quebec City, Canada, three draft reports were approved for public consultation: Dose Rate Coefficients for External Exposures to Environmental Sources, Paediatric Reference Computational Phantoms, and Radiological Protection in
Therapy with Radiopharmaceuticals, in addition to establishing 4 new Task Groups.

In 2017, the Bo Lindell medal was established to recognise an individual making a significant contribution to the promotion of radiological protection. While in Quebec, the Main Commission voted to bestow the inaugural medal to Dr Nicole Martinez.

In October, the Main Commission met for a second time in Stockholm, Sweden, in conjunction with ICRP and ICRU's 90th anniversary celebrations. In addition to establishing mandates, approving draft reports for consultation, and a joint session with ICRU, the Commission approved the creation of the ICRP Foundation Fund. The purpose is to secure the reliable and sustainable long-term operation of ICRP, and to provide a vehicle for supporters who prefer to contribute to this goal rather than the regular daily business of ICRP.

The Commission will meet in May 2019 in Houston, Texas, and in conjunction with ICRP 2019 in November in Adelaide, Australia.

Scientific Secretariat

The Scientific Secretariat manages the daily business of ICRP, and the Scientific Secretary often represents ICRP at international meetings.



From Left to Right:

Kelsey Cloutier, Development and Communications Manager
Hiroki Fujita, Assistant Scientific Secretary
Lynn Lemaire, Executive Administrator
Christopher Clement, Scientific Secretary
Chunsheng Li, Assistant Scientific Secretary

Not Pictured:

Intern, Braedon Carr
Intern, Sunny Siu
Historian, Toshihiro Higuchi

Under the leadership of the Scientific Secretary, the Scientific Secretariat is responsible for conducting the day-to-day business of ICRP. It is located in Ottawa, Canada, in an office provided as an in-kind contribution from the Canadian Nuclear Safety Commission (CNSC).

The Scientific Secretary, Executive Administrator, and Development and Communications Manager are full-time paid positions. The Assistant Scientific Secretary positions are staffed through a cost-free, multi-year placement, currently from the Japan Atomic Energy Agency (JAEA) (Hiroki Fujita) and Health Canada (Chunsheng Li).

Historian is a voluntary, part-time position. Most interns join on a four-month rotating basis through the CNSC co-op student programme.

ICRP in Numbers:



Committee 1

Committee 1 considers the risk of induction of cancer and heritable disease (stochastic effects) together with the underlying mechanisms of radiation action; also, the risks, severity, and mechanisms of induction of tissue/organ damage and developmental defects (deterministic effects).

The annual Committee 1 meeting was hosted by Committee 1 member Gayle Woloschak at Northwestern University in Chicago, Illinois from 19-21 September 2018. We were saddened by the news that our friend, colleague, and fellow Committee member Ranajit Chakraborty passed away on 24 September 2018.



From left to right: Richard Wakeford (United Kingdom), Andrzej Wojcik (Vice-Chair, Sweden), Kotaro Ozasa (Japan), Michael Hauptmann (Netherlands), Werner Rühm (Chair, Germany) , Kazuo Sakai, (Japan), Jacqueline Garnier-Laplace (Secretary, France), Sisko Salomaa (Finland), Gayle Woloschak (United States)

Not Pictured: Tamara Azizova (Russian Federation), Wolfgang Dörr (Austria), Preetha Rajaraman (India), Mikhail Sokolnikov (Russian Federation), Dan Stram (United States), Quanfu Sun (China)

After their meeting in Chicago, the Committee participated in the Conference of Radiation Health, where they organized a dedicated session on controversial issues in radiological protection and discussed current and future work.

Committee 1 addresses issues pertinent to tissue reactions, risks of cancer and heritable diseases, radiation dose responses, and effects of dose rate and radiation quality. Committee 1 also reviews radiation-induced effects in the embryo/fetus and genetic factors, and in non-human biota, and discusses uncertainties involved in judgements on radiation-induced health effects.

The Working Party on individual radiation response discussed the many factors that influence the responses of individuals to radiation (age and sex, lifestyle, smoking, diet, environmental factors, etc.). As a result, there was an agreement to form a new Task Group about “Factors Governing the Individual Response of Humans to Ionising Radiation”, which was later this year approved by the Main Commission.

On 12 December 2018, ICRP had a joint open workshop with the National Institutes for Quantum and Radiological Science and Technology (QST) and Radiation Effect Research Foundation (RERF) in Tokyo, Japan, which served as a starting forum for this Task Group.

Task Group 64 on Cancer Risk for Alpha Emitters is finalising a draft of the first comprehensive review on Plutonium and Lung Cancer. Task Group 91 on Radiation Risk Inference at Low Dose and Low Dose Rate Exposure for Radiological Protection Purposes updated its action plan and will have the final report drafted in 2019.

Task Group 99 on Reference Animals and Plants (RAPs) Monographs continued to establish a link between RAPs and Representative Organisms for risk assessment. A complete draft version of this report is expected in 2019.

Task Group 102 on Detriment Calculation Methodology is currently taking into account comments from internal reviewers, with the final version being sent to the Main Commission in the Spring of 2019.

The next meeting of Committee 1 will be taking place in Adelaide, Australia following ICRP 2019.

Committee 2

Committee 2 is concerned with the development of dose coefficients for the assessment of internal and external radiation exposure; development of reference biokinetic and dosimetric models; and reference data for workers and members of the public.

Committee 2's 2018 annual meeting was held in Beijing, graciously hosted by Committee 2 member Junli Li of Tsinghua University. Discussions focused on Task Group progress, a joint report with the International Commission on Radiation Units & Measurements (ICRU) to update operational quantities used in measurement of external radiation exposures, dosimetry for non-human biota, and dosimetry in emergencies.



From left to right: Tatsuhiko Sato (Japan), Volodymyr Berkovskyy (Ukraine), Chan Hyeong Kim (Korea), François Paquet (Vice-Chair, France), Alexander Ulanows-ki (Germany), John Harrison (Chair, United Kingdom), Wesley Bolch (Secretary, United States), Maria Antonia Lopez (Spain), Derek Jokisch (United States), Tracy Smith (United Kingdom), Nina Petoussi-Henss (Germany), Augusto Giussani (Germany), Junli Li (China), and Eric Blanchardon (France).

Task Group 36, jointly managed by Committees 2 and 3 on Radiopharmacueticals continued to update Publication 128 with values using Publication 103 methodology, as well as providing dose coefficients for new radiopharmaceuticals. Discussions were also held on the requirements for joint work with Committee 3 to provide dose coefficients for diagnostic x-ray procedures. Task Group 79 on the Use of Effective Dose received a large amount of feedback early in 2018. Both positive and negative feedback are being addressed by the Committee.

Task Group 90 on Age-Dependent Dose Conversion Coefficients for External Exposures to Environmental Sources completed public consultation in October 2018, and work continues on the electronic annex to accompany the report.

Task Group 95 on Internal Dose Coefficients saw part 4 of the Occupational Intakes of Radionuclides series discussed in Beijing in preparation for the approval of the Main Commission. Work is also in progress to replace public dose coefficients.

In November of 2018, the public consultation ended for Task Group 96's report on Computational Phantoms and Radiation Transport. Finally, Task Group 103 on Mesh-Type Reference Computational Phantom completed the public consultation period in December 2018.

Committee 2 will have their next meeting immediately following ICRP 2019 in Adelaide, Australia.

Committee 3

Committee 3 is concerned with protection of persons and unborn children when ionising radiation is used for medical diagnosis, therapy, or for biomedical research; also, assessment of the medical consequences of accidental exposures. Since 2017, Committee 3 has added radiological protection in veterinary medicine to its mandate.

The annual Committee 3 meeting took place in Beijing, China from 8-11 November 2018, and was hosted by Committee 3 member Yantao Niu and the Chinese Society of Imaging Technology (CSIT). The meeting ran concurrently with the Annual Congress of the Chinese Society of Radiology (CSR), where International Society of Radiographers and Radiological Technologists (ISRRT) participated.



Front Row (Left to Right): Keon Kang (South Korea), Sandor Demeter (Canada), Lodewijk Van Bladel (Belgium), Madan Rehani (Secretary, United States), Kimberly Applegate (Chair, United States), Colin Martin (Vice-Chair, United Kingdom), Jamila Salem Alsuwaidi (UAE), Marie-Claire Cantone (Italy), Makoto Hosono (Japan)

Back Row (Left to Right): Guy Frija (Liaison to Committee 3), Reinhard Loose (Germany), Claudia Ruebe (Germany), David Sutton (United Kingdom), William Small (United States, Josep Marti-Climent (Spain)

Not Pictured: Yantao Niu (China), Michel Bourguignon (France)

Committee 3 members have expertise in diagnostic radiology, radiation oncology, nuclear medicine, medical physics, epidemiology and biostatistics, regulatory application of radiological protection, process and quality improvement, and human and veterinary medicine. in 2018, Committee 3 added Claudia Ruebe, a radiation oncologist with expertise in human radiation sensitivity.

Publication 139, on Occupational Radiological Protection in Interventional Procedures, was released in early 2018. The Task Group 101 report on Radiological Protection in Therapy with Radiopharmaceuticals completed public consultation in September of 2018 and will be released in 2019. Task Group 36, a joint Task Group with Committee 2, will provide a draft report on Doses to Patients from Diagnostic Nuclear Medicine by the next committee meeting. The draft report for Task Group 89 on Occupational Radiological Protection in Brachytherapy is in the advanced stages and will be reviewed by Committee 3 critical reviewers in mid 2019.

In 2017, the need for two joint Task Groups was identified (and approved in 2018 by the Main Commission). As Task Group 109 (Committee 3/Committee 4) on Ethics in Radiological Protection for Medical Diagnosis and Treatment and Task Group 110 (Committee 3/Committee 4) on Radiological Protection for Occupational and Public Exposure in Veterinary Practice.

Committee 3 was instrumental in the work of the 2018 Main Commission Task Group 107 that provided a needs assessment for radiological protection in veterinary practice for patients and will publish its report as two articles.

An outline for Task Group 109 has been drafted, and the mandate of Task Group 110 is proposed to be extended to include the protection of exposed animals.

The next steps for Task Group 111, a joint effort with Committee 1, on Factors Governing the Individual Response to Ionising Radiation, were discussed at a series of ICRP-QST-RERF workshops in Hiroshima and Tokyo, Japan in December.

On an ongoing basis, Committee 3 will continue to work on the ICRP Glossary Project and develop learning materials for the web site open to all stakeholders, ICRPaedia.

Committee 3 will next meet in November 2019 in Adelaide, Australia.

Committee 4

Committee 4 is concerned with providing advice on the application of the recommended system of protection in all its facets for occupational and public exposure. It also acts as the major point of contact with other international organisations and professional societies concerned with protection against ionising radiation.

Committee 4 met in Abu Dhabi in the United Arab Emirates in November 2018, and will meet in Adelaide, Australia in November 2019.



Back Row (Left to Right): Toshimitsu Homma (Japan), Eduardo Gallego (Spain), Nicole Martinez (United States), Thierry Schneider (France), Francois Bochud (Switzerland), Jean-Francois Lecomte (Secretary, France), Kathryn Higley (Vice-Chair, United States)

Front Row (Left to Right): Anne Nisbet (United Kingdom), David Copplestone (United Kingdom), Donald Cool (Chair, United States), Michael Boyd (United States), Sergey Shinkarev (Russian Federation), Yahong Mao (China), Analia Canoba (Argentina), John Takala (Canada)

Not Pictured: Nobuhiko Ban (Japan), Gillian Hirth (Australia), Catrin Koch (Sweden)

The Committee 4 programme of work includes application of the Commission's recommendations in several broad areas, including: various aspects of existing exposure situations; leading the ICRP effort in Fukushima and emergency situations; elaborating on the foundations of the System of Radiological Protection, protection of the environment; developing topical application reports in consultation with organisations with formal relations with ICRP; and, applications of work conducted by other committees in the areas of health effects, dosimetry, and medicine.

Related to existing exposure situations, the report of Task Group 76 on the Application of the Commission's Recommendations on NORM (Naturally Occuring Radioactive Material) will complete public consultation in February 2019. A report for Task Group 98 on Exposures Arising from Contaminated Sites from Past Industrial, Military, and Nuclear Activities is in development. For environmental protection, Task Group 72 on Radiation Weighting Factors for Reference Animals and Plants will complete public consultation in February 2019. A report for Task Group 105 on Considering the Environment When Applying the System of Radiological Protection is under development and will discuss ethical values, stakeholder involvement, and practical implementation.

In emergency exposure situations, a report of Task Group 93 on Protection in the Event of a Nuclear Accident, updating *Publications 109* and *111,* will have consultation with organisations in formal relations with ICRP in early 2019. A Working Party has been formed to update *Publication 96* and consider other types of emergency situations. A Working Party has also been formed to examine the issues of reasonableness and tolerability in the system of radiological protection, as a follow on action from ICRP *Publication 138*.

Topical subjects currently being pursued include the work of Task Group 97 on surface and near surface disposal of solid radioactive waste and Task Group 106 on radiation protection for activities involving mobile high activity sources. Joint Task Groups include Task Group 99 on reference animals and plants with Committee 1, Task Group 109 on ethics in radiological protection for medical diagnosis and treatment with Committee 3, and Task Group 110 on radiological protection in veterinary medicine with Committee 3.



Free the Annals

In October 2017, at the 4th International Symposium on the System of Radiological Protection in France, ICRP Chair Claire Cousins announced ICRP's intention to Free the Annals. A campaign was launched to raise the € 500 000 needed to offset the expected loss of royalties. Through support from organisations and individuals around the world, Dr Cousins was able to announce the initiative's success.

"I would personally like to thank all those who have supported Free the Annals. I firmly believe that the success of this initiative will have a major, positive impact on the practice of radiological protection and on all who rely on the recommendations published in Annals of the ICRP."

This is a permanent change to the way the world will access Annals of the ICRP. Once a publication has been available for two years, it will automatically become free to download.

Our 2016-2020 Strategic Plan includes three strategic priorities, including promoting awareness of radiological protection and broadening access to ICRP recommendations, and increasing engagement with industry, governments, professionals, and the general public. The success of the Free the Annals initiative directly impacts both.

These changes will take effect at the end of 2019, when all of issues of Annals of the ICRP up to the end of 2017 (up to *ICRP Publication 137*) will be freely available in the Publications section of our website.

Special thanks to the United States Department of Energy (DOE), the Federal Authority for Nuclear Regulation (FANR, UAE), the United States Environmental Protection Agency (EPA), and the Chinese Institute for Radiation Protection (CIRP) for leading the way in freeing the Annals. In the following pages, please find a complete list of the organisations and individuals that made this happen.

Free the Annals Supporting Organisations

Chinese Society for Radiation Protection (CSRP)

Italian National Inspectoriate for Nuclear Safety and Radiation Protection (ISIN)

Free the Annals Individual Supporters

Fatima Al Kaabi (UAE)
Penelope Allisy (United Kingdom)
Meshary Alnuaimi (Kuwait)
Kimberly Applegate (United States)
Nobuhiko Ban (Japan)
Catrin Bauréus Koch (Sweden)
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Kelsey Cloutier (Canada)
Donald Cool (United States)
Claire Cousins (United Kingdom)
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Andrew Yule (Australia)

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THE NIPPON FOUNDATION

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

FANR Federal Authority for Nuclear Regulation

IAEA International Atomic Energy Agency

U.S.NRC United States Nuclear Regulatory Commission Protecting People and the Environment

United States Environmental Protection Agency

Innovative Solutions for Energy and Environment JANUS

CNSC CCSN

Health Canada

ANDRA Agence nationale pour la gestion des déchets radioactifs

Australian Government Australian Radiation Protection and Nuclear Safety Agency

Chinese Society of Radiation Protection (CSRP)

IRSN INSTITUT DE RADIOPROTECTION ET DE SÛRETÉ NUCLÉAIRE

Strål säkerhets myndigheten Swedish Radiation Safety Authority

Department of Energy United States of America

Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra

Swiss Confederation

Federal Department of Home Affairs FDHA Federal Office of Public Health FOPH

Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra

Swiss Confederation

Eidgenössisches Nuklearsicherheitsinspektorat ENSI Inspection fédérale de la sécurité nucléaire IFSN Ispettorato federale della sicurezza nucleare IFSN Swiss Federal Nuclear Safety Inspectorate ENSI

JAEA

放影研 RERF

QST

DSA Norwegian Radiation and Nuclear Safety Authority

CSN CONSEJO DE SEGURIDAD NUCLEAR

NEI NUCLEAR ENERGY INSTITUTE

Southern Ural Biophysics Institute SUBI

NEA Nuclear Energy Agency

ISR The International Society of Radiology

IRPA

GEISLAVARNIR RÍKISINS ICELANDIC RADIATION SAFETY AUTHORITY

STUK

Danish Radiation Protection Authority (SIS)

Cameco

JRIA Japan Radioisotope Association

Organisations in Formal Relations With ICRP

ICRP maintains formal relations with other organisations with an interest in radiological protection through specific agreements, or by granting Special Liaison status to organisations whose work is relevant to ICRP's mandate. Organisations currently in formal relations with ICRP are shown below.

EUROPEAN ALARA NETWORK

EUROPEAN RADIOECOLOGY ALLIANCE

Conference of Radiation Control Program Directors, Inc. Est. 1968

European Commission

ENISS

EURADOS

EURAMED European Alliance for Medical Radiation Protection Research

FORO

HERCA HEADS OF THE EUROPEAN RADIOLOGICAL PROTECTION COMPETENT AUTHORITIES

ICRU

IAEA International Atomic Energy Agency

IEC

Electrical Equipment in Medical Practice (IEC/TC62)

International Labour Organization

industriall global union

IRPA

ISOE Information System on Occupational Exposure

MELODI

NCRP National Council on Radiation Protection and Measurements

NEA Nuclear Energy Agency

NERIS

UNSCEAR

World Health Organization

WORLD NUCLEAR ASSOCIATION

International Organization for Medical Physics IOMP

ISR The International Society of Radiology

IEC

IEC - Nuclear Instrumentation (IEC/TC45)

ESR EUROPEAN SOCIETY OF RADIOLOGY

ISRRT INTERNATIONAL SOCIETY OF RADIOGRAPHERS & RADIOLOGICAL TECHNOLOGISTS

90th Anniversary

In October, the Swedish Radiation Safety Authority (SSM), hosted a two-day colloquium celebrating the 90th anniversaries of both ICRP and the International Commission on Radiation Units and Measurements (ICRU). The programme highlighted 90 years of radiation science and radiological protection, with a focus on possible future developments in the sciences and the evolution of radiological protection.

The programme, as well as video of all presentations, can be found on SSM's YouTube playlist.





Bo Lindell Medal

In October of 2017, the International Commission on Radiological Protection (ICRP) established the creation of the Bo Lindell Medal. Honouring the memory and dedication of Bo, ICRP awards the medal to an individual making a significant contribution to the promotion of radiological protection. Aimed at professionals early-to-mid career, ICRP received nominations of worthy individuals from around the world for consideration.



In April 2018, the main commission selected Dr Nicole E Martinnez as the first recipient of the Bo Lindell Medal for promotion of radiological protection.

Nicole is an Assistant Professor at Clemson University in the Department of Environmental Engineering and Earth Sciences, where she teaches and conducts research related to environmental risk assessment and radiation protection. She is an author on 20 peer-reviewed publications and over 50 professional presentations.

Her BS is in Applied Mathematical Sciences from Texas A&M University, and her MS and PhD are both in Radiological Health Sciences from Colorado State University.

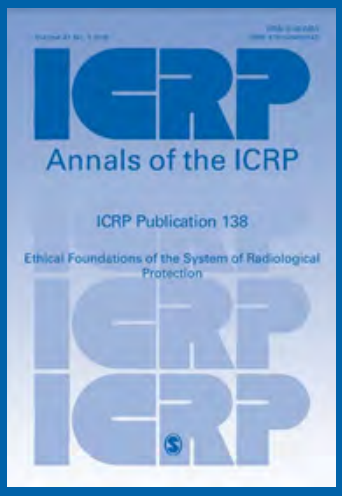
Prior to attending graduate school, she served in the United States Navy, first as an instructor at the Nuclear Power School, and then in the radiation safety division at Naval Medical Center Portsmouth. After, she worked for General Physics Corporation monitoring, modeling, and advising on (mostly conventional) power plant efficiency. She currently serves on Committee 4, is a Certified Health Physicist, and is also a Registered Yoga Teacher.

Nicole is also interested in promoting diversity and inclusivity within the radiation sciences, women in particular, serving as guest editor for a special issue of the Health Physics Journal (November 2018, Volume 115, Issue 5) with women-led articles. She also led the formation of the women in radiological protection section within the Society.

Task Groups

Active as of 31 December 2018

C2/3 TG36:	Radiation Dose to Patients in Diagnostic Nuclear Medicine, Chaired by Augusto Giussani
C1 TG64:	Cancer Risk from Alpha Emitters, Chaired by Eric Blanchardon and Richard Wakeford
MC TG72:	RBE and Reference Animals and Plants, Chaired by Kathryn Higley
C4 TG76:	Application of the Commission's Recommendations to NORM (Naturally Occurring Radioactive Material), Chaired by Jean-François Lecomte
C2 TG79:	The Use of Effective Dose as a Risk Related Radiological Protection Quantity, Chaired by John Harrison
C3 TG89:	Occupational Radiological Protection in Brachytherapy, Chaired by William Small,
C2 TG90:	Age-dependent Dose Conversion Coefficients for External Exposures to Environmental Sources, Chaired by Nina Petoussi-Henβ
C1 TG91:	Radiation Risk Inference at Low-dose and Low-dose Rate Exposure for Radiological Protection Purposes, Chaired by Werner Rühm
C4 TG93:	Update of ICRP Publication 109 and 11, Chaired by Michiaki Kai
C2 TG95:	Internal Dose Coefficients, Chaired by Francois Paquet
C2 TG96:	Computational Phantoms and Radiation Transport, Chaired by Wesley Bolch
C4 TG97:	Application of the Commission's Recommendation for Surface and Near Surface Disposal of Solid Radioactive Waste, Chaired by John Takala
C4 TG98:	Application of the Commission's Recommendations to Exposures Resulting from Contaminated Sites from Past Industrial, Military and Nuclear Activities. Chaired by Michael Boyd
C1/4 TG99:	Reference Animals and Plants (RAPs) Monographs, Chaired by Jacqueline Garnier-Laplace
C3 TG101:	Radiological Protection in Therapy with Radiopharmaceuticals, Chaired by Yoshiharu Yonekura
C1 TG102:	Detriment Calculation Methodology, Chaired by Nobuhiko Ban
C2 TG103:	Mesh-type Reference Computational Phantoms, Chaired by Chan Hyeong Kim
MC TG104:	Integration of Protection of People and of the Environment in the System of Radiological Protection, Chaired by Carl-Magnus Larsson
C4/5 TG 105:	Considering the Environment when Applying the System of Radiological Protection, Chaired by David Copplestone
C4 TG 106:	Application of the Commission's Recommendations to Activities involving Mobile High Activity Sources, Chaired by Donald Cool
C3 TG108:	Optimisation of Radiological Protection in Digital Radiography, Fluoroscopy, and CT in Medical Imaging, Chaired by Colin Martin
C3/4 TG109:	Ethics in Radiological Protection for Medical Diagnosis and Treatment, Chaired by Francois Bochud and Marie-Claire Cantone
C3/4 TG110:	Radiological Protection for Occupational and Public Exposure in Veterinary Practice, Chaired by Nicole Martinez and Lodewijk Van Bladel
C1/3 TG111:	Factors Governing the Individual Response of Humans to Ionising Radiation, Chaired by Simon Bouffler



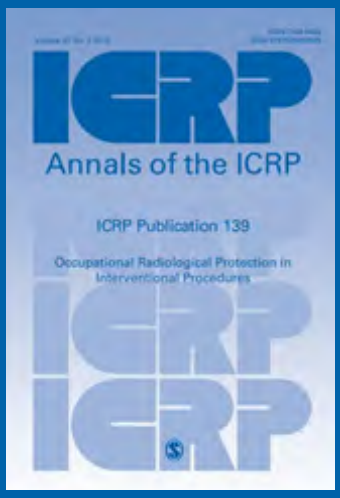
Publication 138

Ethical Foundations of the System of Radiological Protection

Authors on behalf of ICRP

K-W. Cho, M-C. Cantone, C. Kurihara-Saio, B. Le Guen, N. Martinez, D. Oughton, T. Schneider, R. Toohey, F. Zölzer

Abstract - Despite a longstanding recognition that radiological protection is not only a matter of science, but also ethics, ICRP publications have rarely addressed the ethical foundations of the system of radiological protection explicitly. The purpose of this publication is to describe how the Commission has relied on ethical values, either intentionally or indirectly, in developing the system of radiological protection with the objective of presenting a coherent view of how ethics is part of this system. In so doing, it helps to clarify the inherent value judgements made in achieving the aim of the radiological protection system as underlined by the Commission in Publication 103. Although primarily addressed to the radiological protection community, this publication is also intended to address authorities, operators, workers, medical professionals, patients, the public, and its representatives (e.g. NGOs) acting in the interest of the protection of people and the environment. This publication provides the key steps concerning the scientific, ethical, and practical evolutions of the system of radiological protection since the first ICRP publication in 1928. It then describes the four core ethical values underpinning the present system: beneficence/non-maleficence, prudence, justice, and dignity. It also discusses how these core ethical values relate to the principles of radiological protection, namely justification, optimisation, and limitation. The publication finally addresses key procedural values that are required for the practical implementation of the system, focusing on accountability, transparency, and inclusiveness.
The Commission sees this publication as a founding document to be elaborated further in different situations and circumstances.

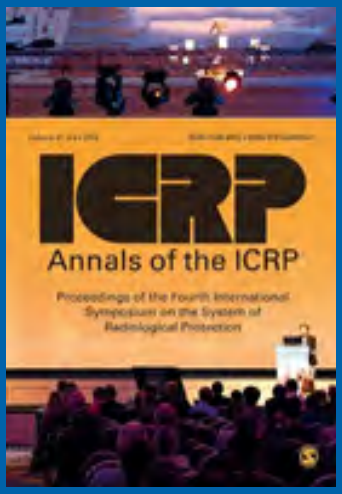


Publication 139

Occupational Radiological Protection in Interventional Procedures

Authors on behalf of ICRP
P. Ortiz Lopez, L.T. Dauer, R. Loose, C.J. Martin, D.L. Miller, E. Vaño, M. Doruff, R. Padovani, G. Massera, C. Yoder

Abstract - In recent publications, such as Publications 117 and 120, the Commission provided practical advice for physicians and other healthcare personnel on measures to protect their patients and themselves during interventional procedures. These measures can only be effective if they are encompassed by a framework of radiological protection elements, and by the availability of professionals with responsibilities in radiological protection. This framework includes a radiological protection programme with a strategy for exposure monitoring, protective garments, education and training, and quality assurance of the programme implementation. Professionals with responsibilities in occupational radiological protection for interventional procedures include: medical physicists; radiological protection specialists; personnel working in dosimetry services; clinical applications support personnel from the suppliers and maintenance companies; staff engaged in training, standardisation of equipment, and procedures; staff responsible for occupational health; hospital administrators responsible for providing financial support; and professional bodies and regulators. This publication addresses these elements and these audiences, and provides advice on specific issues, such as assessment of effective dose from dosimeter readings when an apron is worn, estimation of exposure of the lens of the eye (with and without protective eyewear), extremity monitoring, selection and testing of protective garments, and auditing the interventional procedures when occupational doses are unusually high or low (the latter meaning that the dosimeter may not have been worn).



ICRP 2017 Proceedings

Proceedings of the Fourth International Symposium on the System of Radiological Protection

From the Editorial - We have now held four international symposia on the system of radiological protection: in the USA in 2011, in the United Arab Emirates (UAE) in 2013, in Korea in 2015, and, most recently, in France in October 2017, hosted by the Institut de radioprotection et de sûreté nucléaire (IRSN).

The Fourth International Symposium on the System of Radiological Protection was the first to be held in conjunction with another major international event: the Second European Radiological Protection Research Week (ERPW). As such, we collaborated closely with the five European research platforms: ALLIANCE, EURADOS, EURAMED, MELODI, and NERIS. ICRP-ERPW 2017 attracted more than 500 participants from 42 countries.

The ICRP 2017 programme consisted of five topical sessions on key issues in radiological protection: advances in dose coefficients (with EURADOS); effects, risks, and detriment at low dose and low dose rate (with MELODI); advanced radiotherapy (with EURAMED); postaccident recovery (with NERIS); and integrated protection of people and the environment (with ALLIANCE).

Within the Second ERPW, each of these platforms also held parallel sessions focusing on their own work. It made for a very rich 3-day programme.

ICRP 2017 continued the tradition, began in 2015, to release presentation materials through the ICRP website within hours of being presented. Videos of all presentations were also released during the weeks following the event. These, along with all ICRP 2017 abstracts, lists of attendees and supporters, and summaries of the ICRP Main Commission and committee meetings held in conjunction with the symposium, are available at www.icrp.org (select ‘ICRP symposia’ from the main menu). These proceedings include full papers for almost all presentations. In the few cases where a paper is not available, the abstract is included. These are the work of the individual authors. They are not recommendations of ICRP and do not necessarily represent the views of ICRP. However, together with the material available online, they are a lasting record of the meeting, and give those who could not attend in person a good sense of what was discussed. Also included is a paper by Larry Dauer, not related to a specific presentation, to complement the rest of the material on radiotherapy.

Finances

	2015	2016	2017	2018
INCOMING RESOURCES				
Contributions Received	1 074 816	998 002	1 012 503	1 111 734
Royalties	204 176	142 255	184 722	229 585
Total Incoming Resources	1 278 992	1 140 257	1 197 225	1 341 319
RESOURCES EXPENDED				
Promotion of Radiological Protection	1 018 814	1 039684	1 386 840	933 374
Raising Funds	0	0	37 218	0
Total Resources Expended	1 018 814	1 039 684	1 424 058	933 374
NET MOVEMENT IN RESOURCES	260 178	100 573	(226 833)	407 945
TOTAL FUNDS CARRIED FORWARD	377 629	478 201	251 368	659 313

This is a summary of ICRP annual financial statements as audited by Tudor John Chartered Accountants, Epsom, UK. All amounts are expressed in Canadian dollars.

ICRP2019

5TH INTERNATIONAL SYMPOSIUM ON THE SYSTEM OF RADIOLOGICAL PROTECTION

17-21 NOVEMBER 2019 · ADELAIDE, SOUTH AUSTRALIA



18 November

Australasian Radiation Protection Society Forum



19 November MINES

Mining and Other Natural Sources



20 November MEDICINE

RP Challenges in Cutting-Edge Medicine

21 November MARS

Radiological Protection in Space

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