



Tercera Jornada sobre NOVEDADES Y TENDENCIAS EN EL SISTEMA DE PROTECCIÓN RADIOLÓGICA DE LA ICRP

Madrid, 8 de mayo de 2018

Actividad del Comité 4 de la ICRP (Aplicación de las Recomendaciones de la Comisión)

A partir de la presentación del Presidente del Comité 4, realizada el 12 de octubre de 2017 en el 4º Simposio sobre el Sistema de Protección Radiológica (París)

Donald Cool, EPRI, USA

Presentado por: **Eduardo Gallego**, miembro del Comité 4 de la ICRP

Contenido

- El mandato para el nuevo Comité 4
- El Sistema de Protección Radiológica
- Programa de trabajo del C4



Esta presentación no ha sido aprobada ni respaldada por la Comisión Principal de la ICRP.

Refleja las ideas y opiniones del autor (Donald Cool) en representación de la ICRP, como Presidente del Comité 4.

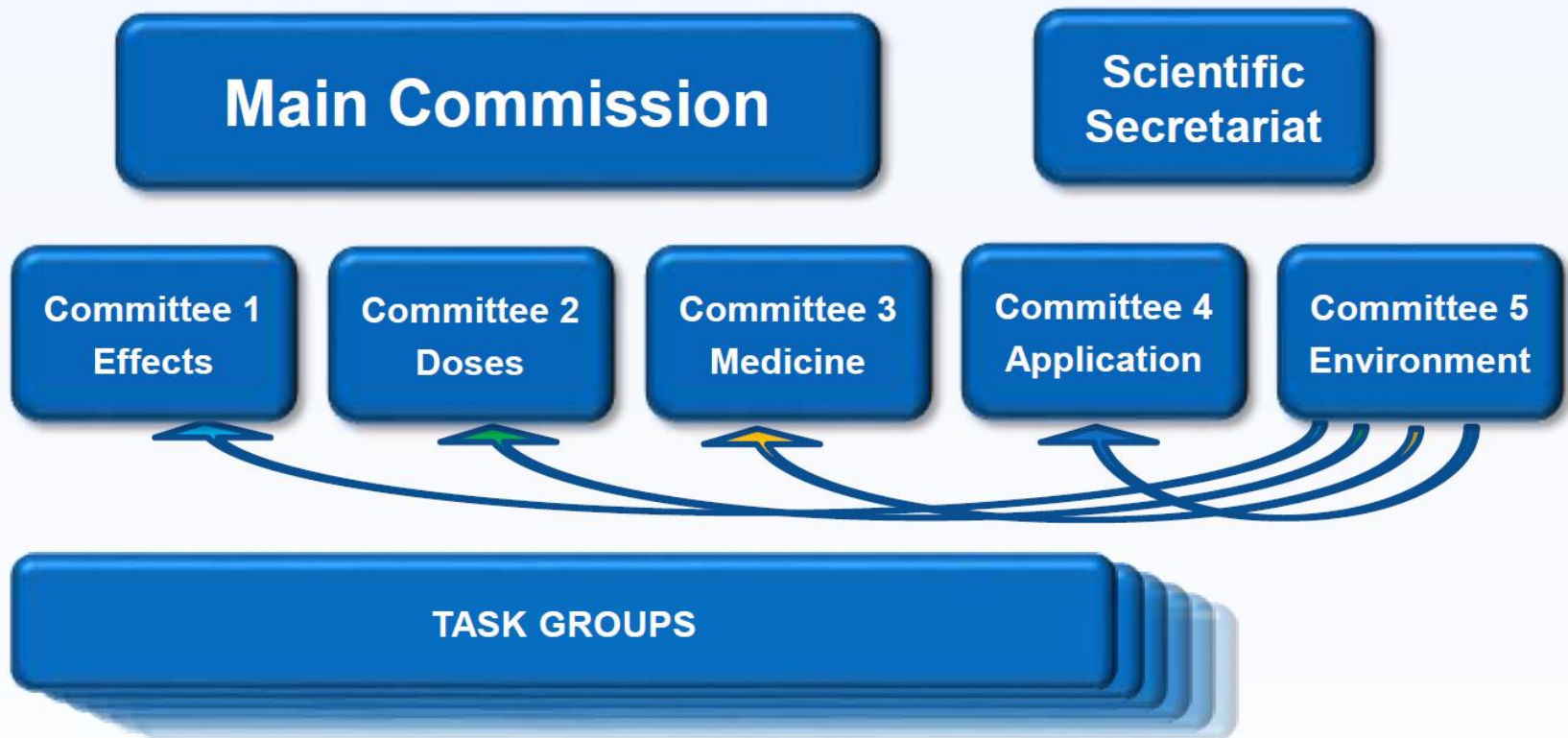
Enhance Integration and Application

**Development of principles and recommendations on
radiological protection of people and the environment
in all exposure situations**

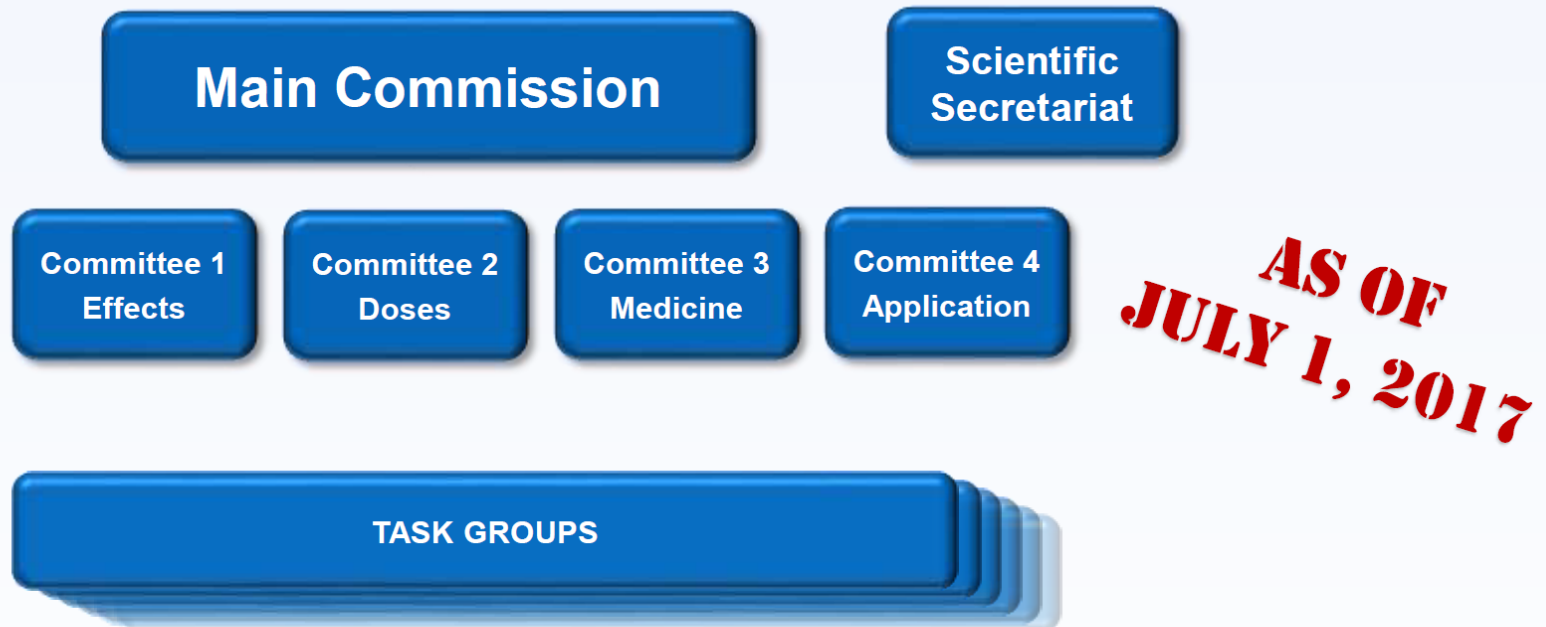
- **A holistic and integrated view of all the benefits and impacts should include appropriate consideration of protection of both people and the environment**
- **There remains work to be done to bring to fruition a consistent and coherent approach to the justification and optimisation in any particular exposure situation**
- **Committee 4:**
 - Produce application reports
 - Assist other Committees with application viewpoint



Integration of Environment in Each Area 2013 – 2017 Term



Integration of Environment in Each Area Structure for 2017 – 2021 Term



Committee 4: Development of principles and recommendations on radiological protection of people and the environment in all exposure situations

New Committee 4

- **New Terms of Reference for Protection of People and the Environment**
- **Goals**
 - Continue and complete works from 2013-2017
 - Integrate Environment in System of Protection, and move forward with key topics for implementation
 - Begin Foundations development – Explore topics from MC Strategic Discussion
 - Support consistent consideration of application in interactions with other Committees.

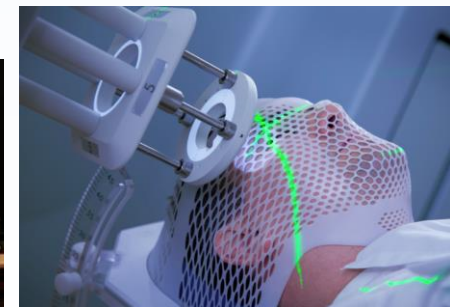
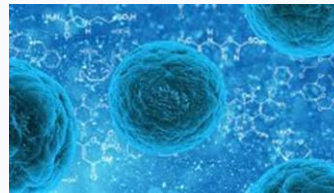
C4 Membership 2017 - 2021

- Donald Cool – [USA](#) (*Chair*)
- Kathryn Higley – [USA](#) (*Vice-Chair*)
- Jean-François Lecomte – [France](#) (*Secretary*)
- Nobuhiko Ban - [Japan](#)
- François Bochud - [Switzerland](#)
- Mike Boyd – [USA](#)
- Analia Canoba – [Argentina](#)
- David Copplestone - [UK](#)
- Eduardo Gallego – [Spain](#)
- Gillian Hirth – [Australia](#)
- Toshimitsu Homma - [Japan](#)
- Catrin Bauréus Koch – [Sweden](#)
- Yahong Mao – [China](#)
- Nicole Martinez - [USA](#)
- Anne Nisbet – [UK](#)
- Thierry Schneider – [France](#)
- Sergey Shinkarev – [Russia](#)
- John Takala - [Canada](#)

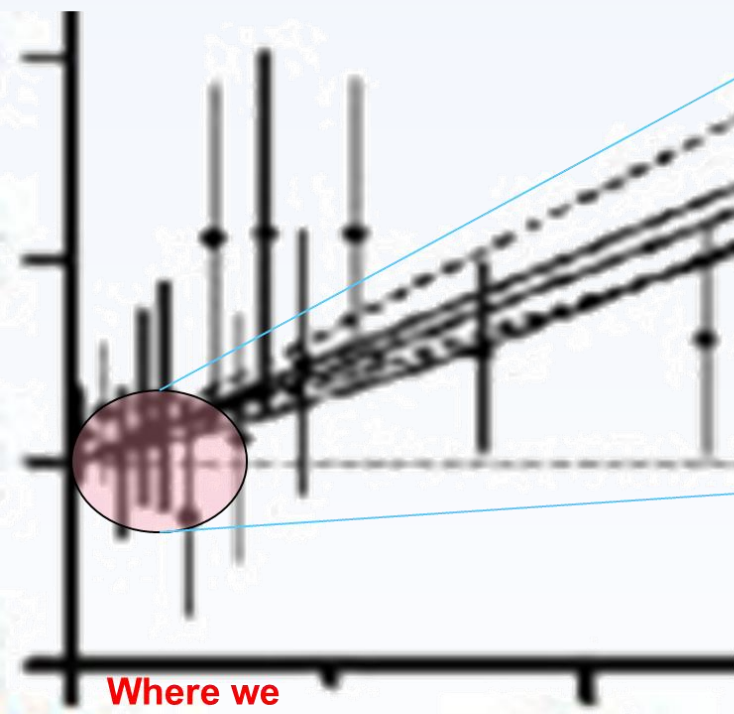


The Evolution of Protection from the Beginning

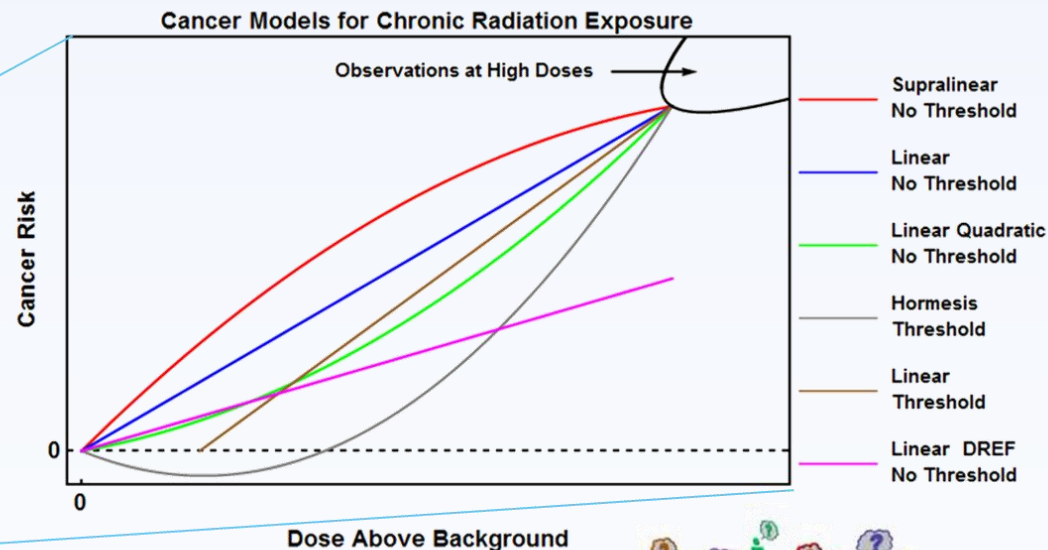
- *The objective of the work of ICRP is to contribute to an appropriate level of protection against the detrimental effects of ionising radiation exposure without unduly limiting the benefits associated with the use of radiation.*
- We built the protection system for sources we introduced
- **Protection Objectives**
 - Manage **harm**: prevent deterministic effects
 - Manage **probability of harm**: reduce exposures ALARA
 - Genetic
 - Cancer
 - Non-cancer



Many Factors to be Considered



Where we
have great
uncertainty



Non-Cancer Effects



Environmental Effects



Foundations

- **Social and Ethical Principles/Values**

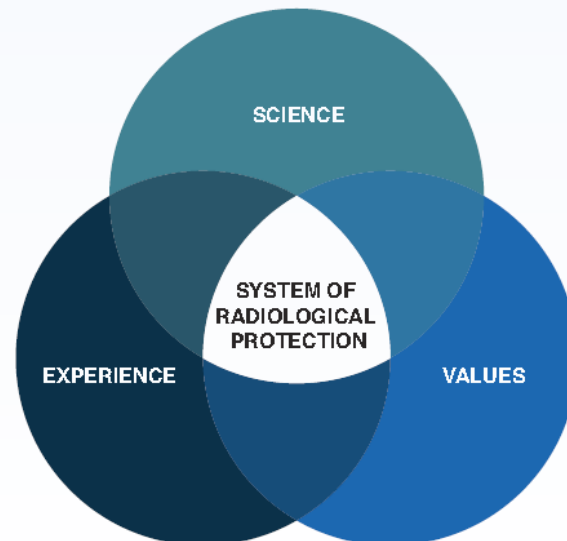
- Beneficence
- Non-maleficence
- Dignity/Autonomy
- Justice
- Prudence
 - Reasonableness
 - Tolerability
 - Peaceful
 - Vigilant
 - Reaction
- Accountability
- Transparency
- Inclusiveness
- Conservation/biodiversity/sustainability

- **Science**

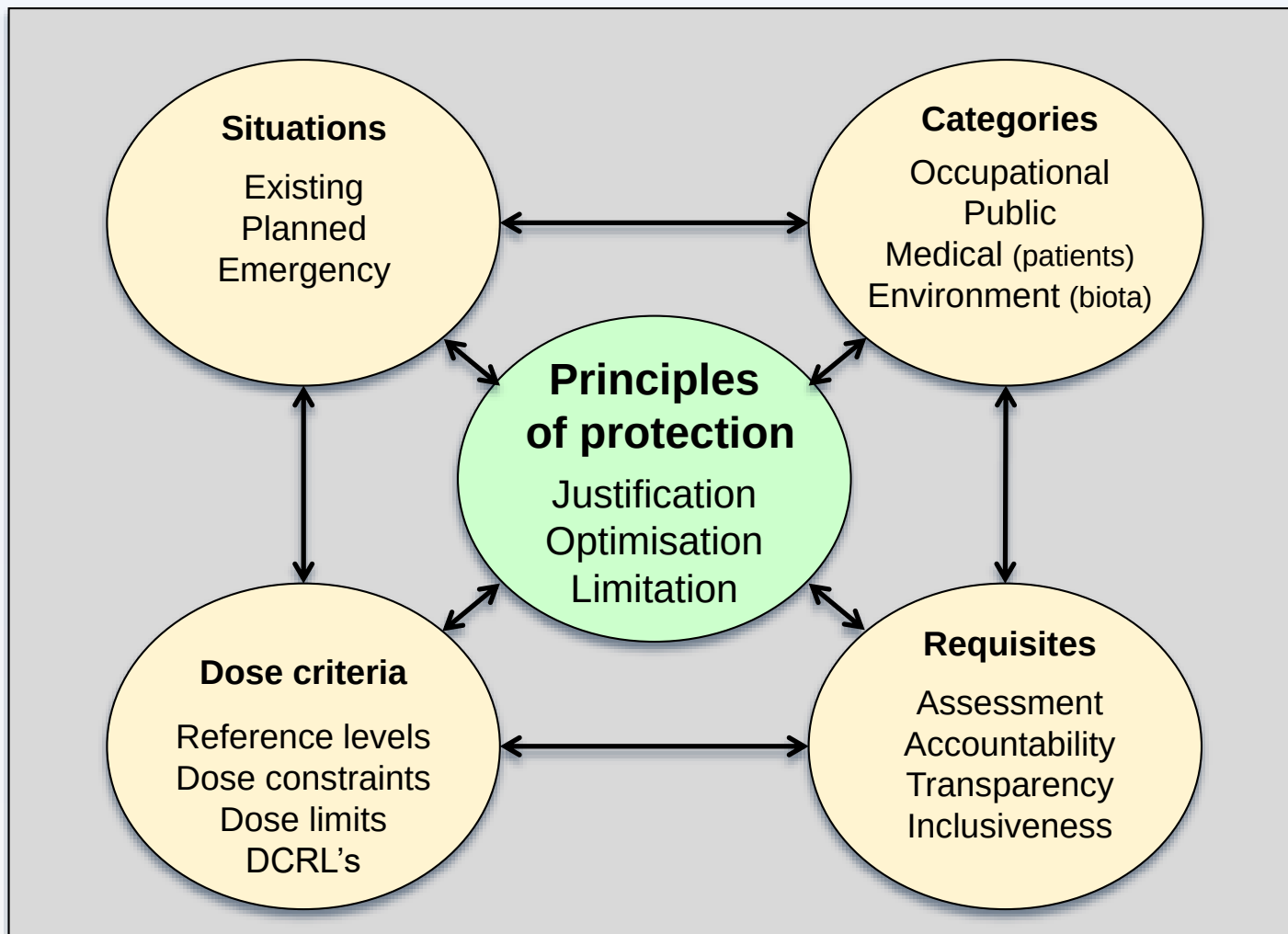
- Epidemiology
- Radiobiology
- Anatomy
- Physiology
- Metrology
-

- **Experience**

- Hiroshima/Nagasaki
- Nuclear Installations
- Medical
- Industrial
- Chernobyl
- Fukushima
-

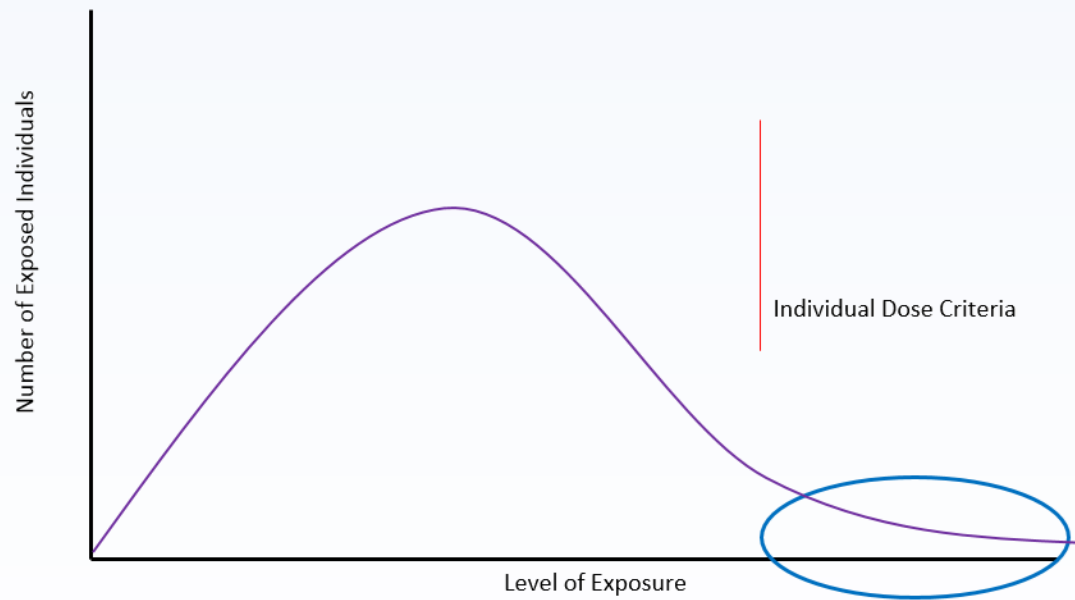


System of Protection



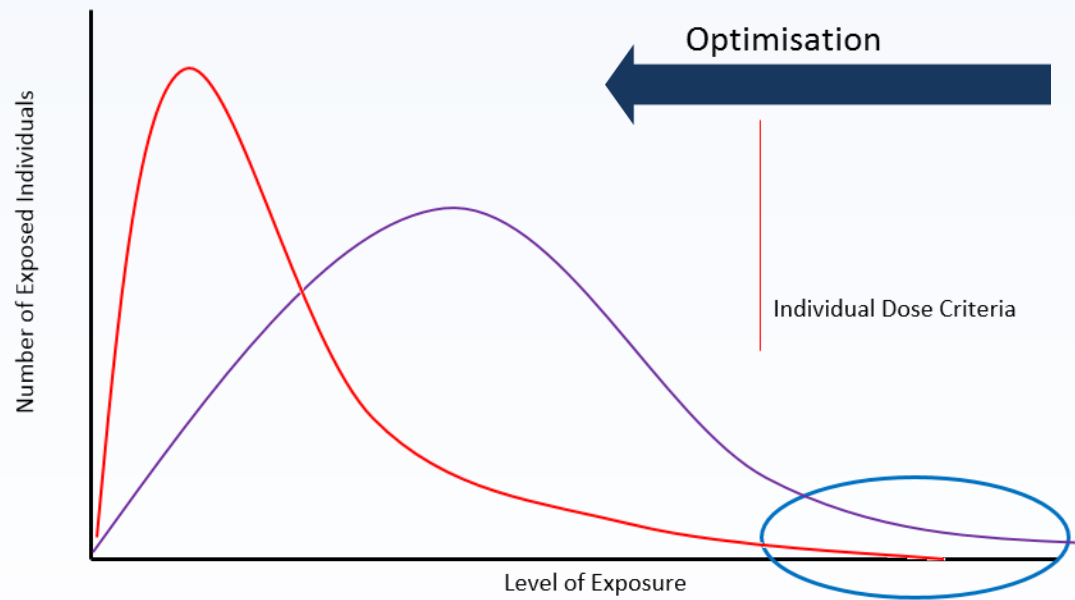
Unified Protection Approach

- Characterize exposures
- Justify taking actions
- Identify exposures of individuals or populations in the environment which warrant specific attention



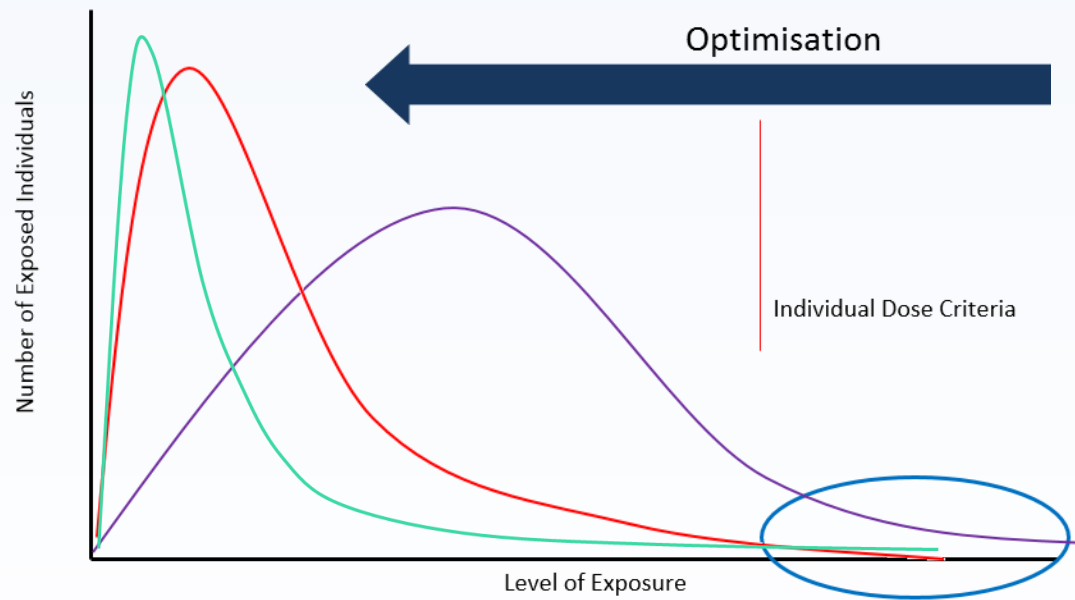
Apply Optimization

- Characterize exposures
- Justify taking actions
- Identify exposures of individuals or populations in the environment which warrant specific attention
- Enable stakeholder engagement and action



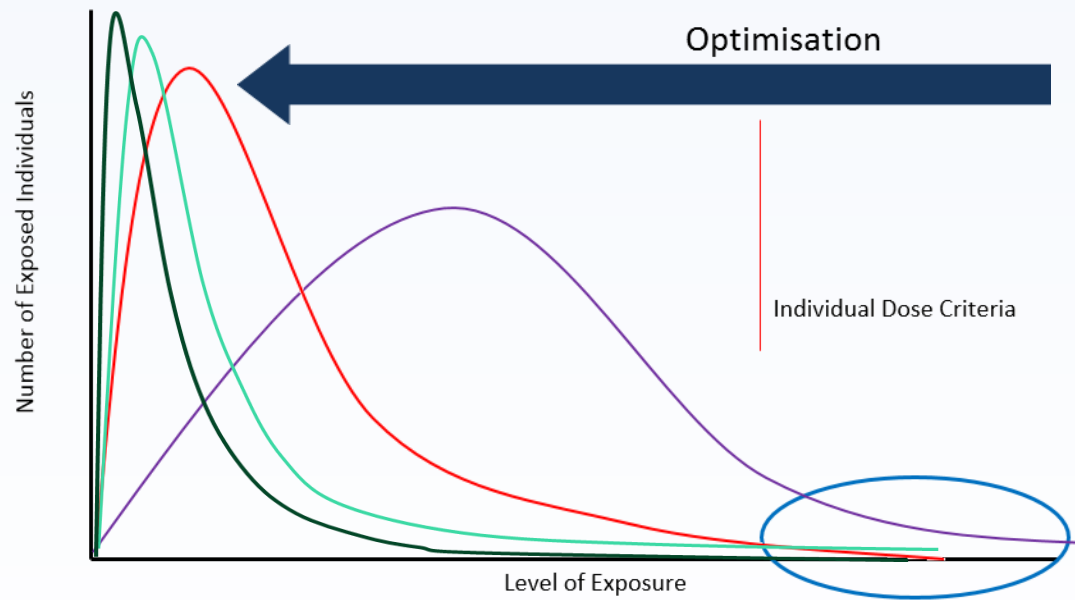
Iterative Process

- Characterize exposures
- Justify taking actions
- Identify exposures of individuals or populations in the environment which warrant specific attention
- Enable stakeholder engagement and action
- Influence the entire dose distribution and shift exposures towards lower values



Build Culture of Protection

- Characterize exposures
- Justify taking actions
- Identify exposures of individuals or populations in the environment which warrant specific attention
- Enable stakeholder engagement and action
- Influence the entire dose distribution and shift exposures towards lower values
- Reduce inequity



2017-2021 C4 Program of Work

- **Five major areas:**

- Existing Exposure Situations
- Emergency Exposure Situations and Lessons from Fukushima
- Integration of protection of the environment
- Foundations and Fundamentals of Radiation Protection
- Topical Application Reports

- **Support to other Committees**



Existing Exposure Situations

- **Existing Exposure Situations**
 - *Publication 126: Radiological Protection against Radon Exposure*, December 2014
 - *Publication 132: Radiological Protection from Cosmic Radiation in Aviation* (2016)
 - TG76 on **NORM in Industrial Processes** – draft report almost ready for consultation
 - TG98 on **Contaminated Sites** – draft report under discussion
 - Definition of Occupational Exposure & graded approach
- Response to Fukushima
- Environmental Protection
- Foundations and Fundamentals
- Topical Application Reports



Emergency Exposure Situations

- Existing Exposure Situations
- **Response to Fukushima – Emergency exposure situations**
 - TG93 update of Publications 109 & 111
 - Already discussed in the C4
 - Consultation with Special Liaison Organizations as next step

- Environmental Protection
- Foundations and Fundamentals
- Topical Application Reports



Pub. 109: Aplicación de
las Recomendaciones de
la Comisión para la
protección de la población
en situaciones de
exposición de emergencia



ICRP Publication 109



Application of the Commission's
Recommendations for the Protection
of People in Emergency Exposure Situations

ICRP PUBLICATION 109

Approved by the Commission in October 2008



ICRP Publication 111



Application of the Commission's
Recommendations to the Protection
of People Living in Long-term
Contaminated Areas after a Nuclear
Accident or a Radiation Emergency

ICRP Publication 111

Approved by the Commission in October 2008

Pub. 111: Aplicación de las
Recomendaciones de la
Comisión para la protección de
la población que habite áreas
contaminadas a largo plazo a
consecuencia de un accidente
nuclear o una emergencia
radiológica

(En proceso de actualización post-Fukushima)

Emergency Exposure Situations

- Existing Exposure Situations
- **Response to Fukushima – Emergency exposure situations**
 - TG93 update of Publications 109 & 111
 - Consultation with Special Liaison Organizations as next step
 - Future Work
 - Possible Task Group to revise Publication 96 to look at emergencies other than large reactors
 - Consideration of the handling of pets and livestock, and
 - Recommendations for businesses affected by a radiological event
- Environmental Protection
- Foundations and Fundamentals
- Topical Application Reports



Protection of the Environment

- Existing Exposure Situations
- Response to Fukushima

- **Environmental Protection**

- Develop Integration Script and Approach. Consistently apply to ongoing documents
- TG 104: [Main Commission TG](#), **Integration of Protection of People and the Environment in the System of Radiological Protection**
- **Publication 136: Dose Coefficients for Non-human Biota Environmentally Exposed to Radiation (2017)**
- TG 72: **RBE and Reference Animals and Plants** – under discussion with the Main Commission
- TG 99: with Committee 1, Reference Animals and Plants (**RAPS**) **Monographs**
- TG 105: **Considering the Environment when Applying the System of Radiological Protection** – Case studies



Protection of the Environment

- Existing Exposure Situations
- Response to Fukushima
- **Environmental Protection**
 - New Task Groups approved April 2018
 - **TG107 – Main Commission – Advice on Radiological Protection of the Patient in Veterinary Medicine**
 - **TG110 – Joint Committee 3 and 4 - Radiological Protection for Occupational and Public Exposure in Veterinary Practice**



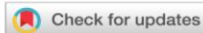
Foundations of Radiological Protection

- Existing Exposure Situations
- Response to Fukushima
- Environmental Protection
- **Foundations and Fundamentals**
 - **TG94: Ethical Foundations of the System of Radiological Protection**
 - IRPA workshops
 - Public Consultation late Spring 2017
 - Publication 138 (2018)



- Topical Application Reports

Ethical Foundations of the System of Radiological Protection (Pub. 138)



Annals of the ICRP

ICRP PUBLICATION 138

Ethical Foundations of the System of Radiological Protection

Editor-in-Chief
C.H. CLEMENT

Associate Editor
H. OGINO

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

PUBLISHED FOR

The International Commission on Radiological Protection

by



Please cite this issue as 'ICRP, 2018. Ethical foundations of the system of radiological protection. ICRP Publication 138. Ann. ICRP 47(1).'

1

• Table of contents

1. Introduction
 2. Evolution of the system of radiological protection
 3. The core ethical values underpinning the system of radiological protection
 4. Procedural Values
 5. Conclusion
- References
 - Annexes
 - Annex A. Ethical theories
 - Annex B. Biomedical ethical principles
 - Annex C. Cross-cultural values
 - Appendix: Participants at the workshops on the ethics of the system of radiological protection

Ethical Foundations of the System of Radiological Protection (Pub. 138)



Annals of the ICRP

ICRP PUBLICATION 138

Ethical Foundations of the System of Radiological Protection

Editor-in-Chief
C.H. CLEMENT

Associate Editor
H. OGINO

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

PUBLISHED FOR

The International Commission on Radiological Protection

by



Please cite this issue as 'ICRP, 2018. Ethical foundations of the system of radiological protection. ICRP Publication 138. Ann. ICRP 47(1).'

1

• Core Ethical Values

- Beneficence – do good / Non-maleficence – avoid harm
- Prudence
- Justice
- Dignity



• Procedural Values

- Accountability
- Transparency
- Inclusiveness (stakeholder participation)



Foundations of Radiological Protection

- Existing Exposure Situations
- Response to Fukushima
- Environmental Protection
- **Foundations and Fundamentals**
 - **TG94: Ethical Foundations of the System of Radiological Protection**
 - IRPA workshops
 - Public Consultation late Spring 2017
 - Publication 138 (2018)
 - **Future Work**
 - Medical Ethics with Committee 3 – **TG109** – Joint Task group of Committee 3 and 4, approved April 2018
 - Reasonableness and Tolerability



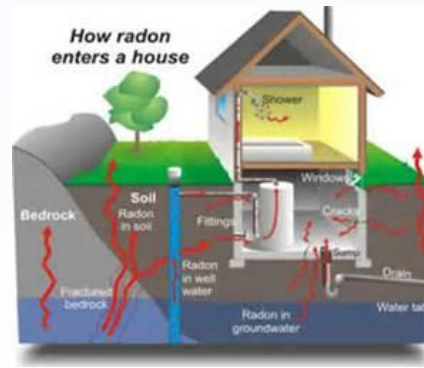
2017-2021 Program Themes

- Existing Exposure Situations
- Response to Fukushima
- Environmental Protection
- Foundations and Fundamentals
- **Topical Application Reports**
 - Publication 125: **Radiological Protection in Security Screening** (2014)
 - TG97 **Surface and Near Surface Waste Disposal**
 - TG106 **Mobile High Activity Sources**
 - Continue interactions with SLO's for topics



Challenges

- How to coherently apply RP System to natural sources and the aftermath of an emergency?
- How does protection of the environment fit into the picture?
- What is tolerable, or acceptable, in a particular situation and prevailing circumstance?
- How to properly balance social and economic factors?
- Who has authority or ability to take actions?
- Communication and Engagement of Stakeholders?



Vision of Future

- **It is time for ICRP to work on its public facing efforts.**
 - Society has moved from risk assessment, to risk communication, and then to stakeholder involvement.
 - Interacting to understand issues, not to defend decisions.
 - Working interactively with stakeholders early in development process. Understanding what they know, and responding.
 - Each scientific decision issued with advice on implementation issues. It is no longer acceptable to issue a new number and leave people to figure out what to do. We must also tell them why, and what they can do.
 - Recognize and support multi-attribute approach to decisions.
 - Recommendations and advice that gives each group of persons what they need to make their decisions.
 - Public, understandable summaries of reports

Summary

- 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.



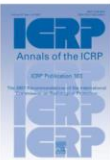
- 18 Members from 12 countries
- 5 Major Areas of Work
 - Existing Exposure Situations*
 - Response to Fukushima*
 - Environmental Protection*
 - Foundations and Fundamentals*
 - Topical Application Reports*
- 10 Active Task Groups + others under discussion
- Participation in TG's of other Committees



FREE THE ANNALS

90th Anniversary Drive of the International Commission on Radiological Protection
Part of the ICRP Advancing Together Initiative

International organisations, national authorities, standard-setting bodies, and professionals rely on the recommendations of the International Commission on Radiological Protection (ICRP) to protect patients, workers, the public, and the environment against harm from ionising radiation. These recommendations are published in ICRP's dedicated journal, **Annals of the ICRP**.



Let's celebrate ICRP's 90th anniversary by making access to the Annals free. To realise this goal, we aim to **raise € 500 000 by the end of 2018**. Thanks to the UAE Federal Authority for Nuclear Regulation and the US Department of Energy, the initiative launched with **20% of the needed support already achieved**. With this, all publications from 1928 to 1988, and a few others including the most recent fundamental recommendations *Publication 103*, are already **free to access at www.icrp.org**.

More contributions are needed from a diverse range of supporters to Free the Annals, especially from organisations that rely on the recommendations of ICRP. Success will:

- Make all ICRP publications, except for the most recent rolling two years, free to access
- Address challenges with access in developing regions, ensuring protection of patients, workers, the public, and the environment world-wide
- Simplify distribution to professionals, policy-makers, and the public everywhere
- Promote collaboration across the radiological protection community
- Recognise the organisations contributing to this transformational initiative

Contact Kelsey Cloutier for more information
Kelsey.Cloutier@icrp.org, +1 613 943 4086

"We are delighted to lead the way with a meaningful contribution towards making the Annals of the ICRP available for free, and in particular we are proud that Publication 103 is now available to everybody thanks to our contribution. Easy access will be a boon to governments, scientists, professionals, and interested citizens world-wide. Let's take on this important initiative together."

Christer Viktorsson, Director General, UAE Federal Authority for Nuclear Regulation (FANR)



"We are pleased to join other agencies and countries in ICRP's efforts with our contribution towards making the Annals of the ICRP available for free; and, in particular, we are thrilled that Publication 103 will be available to everyone. Access will be a benefit to radiation protection professionals, scientists, and interested countries world-wide. Let us undertake this critical initiative together."

Dr. Patricia R. Worthington, Director, Office of Health and Safety, US Department of Energy

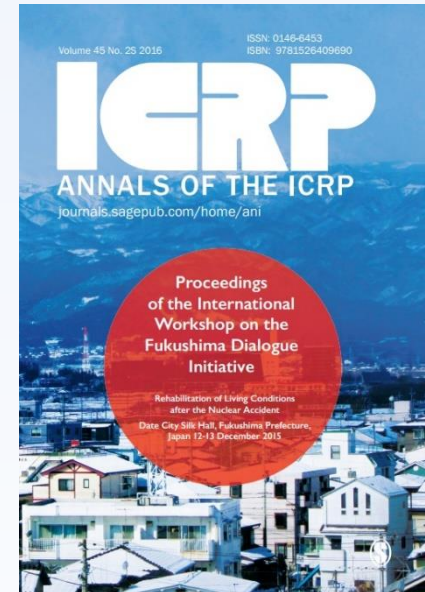
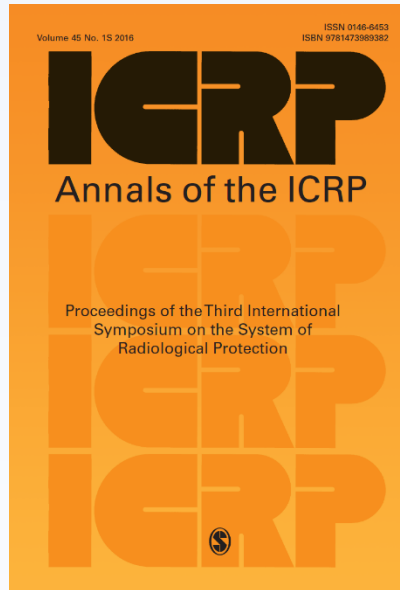
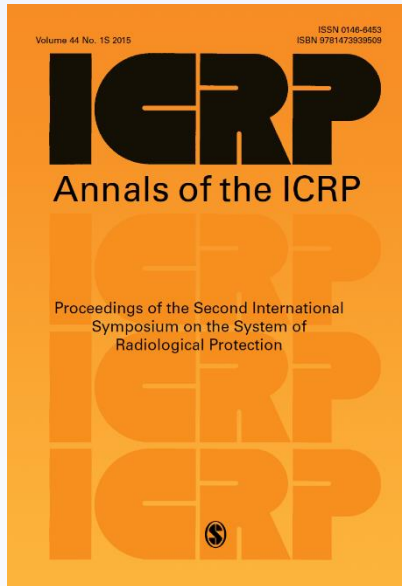


Established in 1928, ICRP is an international, independent, registered charity (UK Charity #1166304), relying on voluntary contributions to support our work. Our ~250 expert members from more than 30 countries and all disciplines relevant to radiological protection volunteer their time to ICRP. Together we develop the System of Radiological Protection, which forms the basis of standards, legislation, guidance, programmes, and practice worldwide.

- Let's celebrate ICRP's 90th anniversary by making access to the Annals free.
- To realise this goal, we aim to raise € 500 000 by the end of 2018.
- Thanks to the UAE Federal Authority for Nuclear Regulation and the US Department of Energy, the initiative launched with 20% of the needed support already achieved.
- With this, all publications from 1928 to 1988, and a few others including the most recent fundamental recommendations *Publication 103*, are already free to access at www.icrp.org.



Actas de los Simposios y del Workshop on the Fukushima Dialogue Initiative



También disponibles gratuitamente:

ICRP Publication 119 - Compendium of Dose Coefficients based on ICRP Publication 60

ICRP Publication 111 - Application of the Commission's Recommendations to the Protection of People Living in Long-term Contaminated Areas after a Nuclear Accident or a Radiation Emergency

ICRP Publication 103 - The 2007 Recommendations of the International Commission on Radiological Protection

ICRP Publications 1 (1928) to 53 (1988)



ICRP2019

5TH INTERNATIONAL SYMPOSIUM ON
THE SYSTEM OF RADIOLOGICAL PROTECTION

M I N E S · M E D I C I N E · M A R S



ADELAIDE
19 · 11 · 19
www.icrp2019.com

HOSTED
BY



ARPS

40+ years of engagement with radiation protection



Australian Government

Australian Radiation Protection
and Nuclear Safety Agency

ICRP



www.ICRP.org



INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION