

# ICRP

## ICRP Activities

2014 North American ISOE ALARA Symposium

Ft. Lauderdale, Florida,  
2014 January 13

Donald A. Cool  
ICRP Main Commission  
Chairman, ICRP Committee 4

# Presentation Overview

- ICRP organization
- ICRP Programme of Work
- Specific Topics of Interest

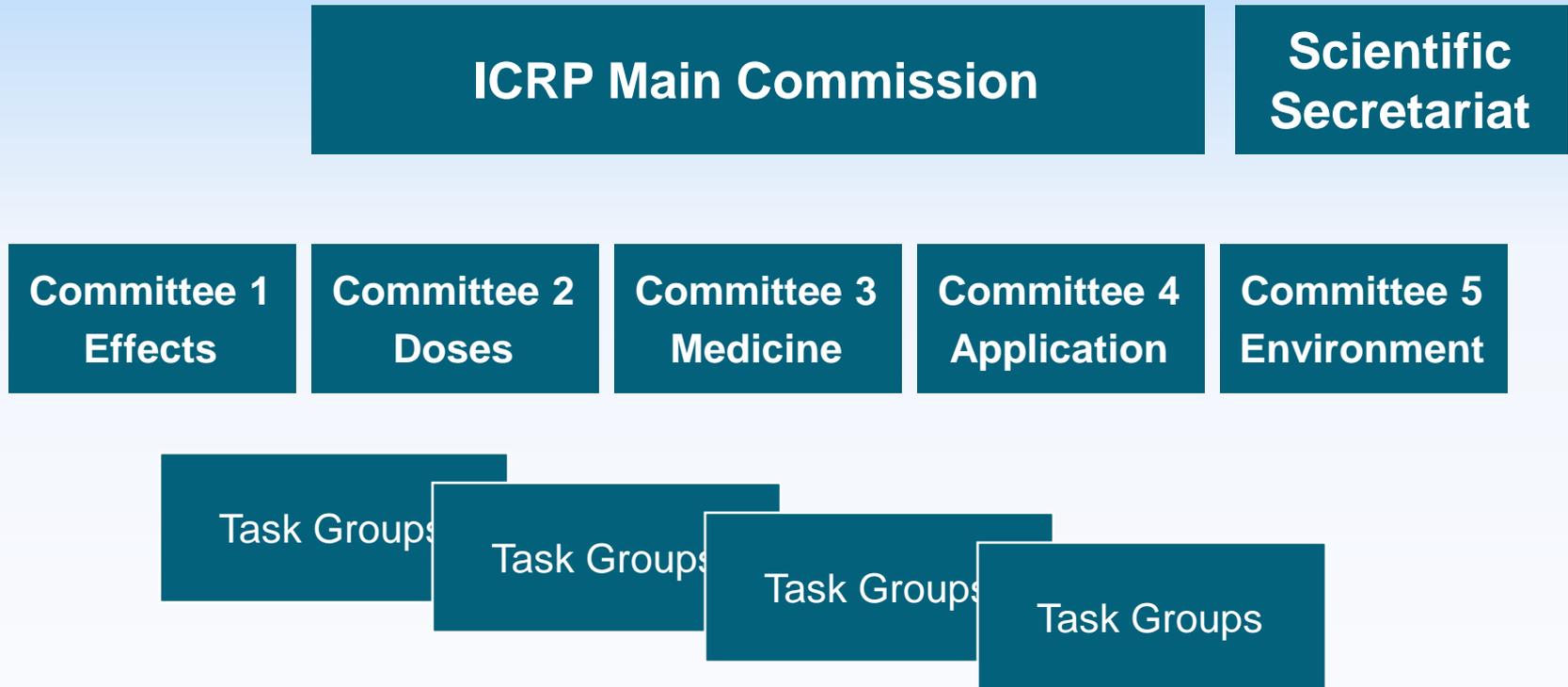
# ICRP

## ICRP Organization

# ICRP

- **Founded in 1928, International X-ray and Radium Protection Committee**
- **Renamed International Commission on Radiological Protection ICRP in 1950**
- **Registered charity UK**
- **Expert members recruited from different areas of radiological protection**
- **Members unpaid and voluntarily give time and effort for the success of ICRP**

# ICRP Structure



**An independent, international community of experts in radiological protection**

**Nearly 250 experts in radiological protection science and policy  
from 32 countries and six continents**

# ICRP Main Commission



**Back Row (L to R):** Jaiki Lee, Hans Menzel, John Harrison (C2 Chair), Carl-Magnus Larsson (C5 Chair), Bill Morgan (C1 Chair), Sergey Romanov, Hua Liu  
**Front Row (L to R):** Ohtsura Niwa, Eliseo Vaño (C3 Chair), Christopher Clement (Scientific Secretary), Claire Cousins (Chair), Jacques Lochard (Vice-Chair), Donald Cool (C4 Chair), John Boice

# ICRP Membership

**237 members from 32 countries**  
(Main Commission, Scientific Secretariat, Committees,  
Task Groups, and Working Parties)



Argentina 3	China 9	Japan 16	Russia 9
Australia 3	Czech Republic 1	Kenya 1	South Africa 1
Austria 13	Finland 2	Korea 6	Spain 5
Belarus 1	France 18	Luxembourg 4	Sweden 10
Belgium 3	Germany 15	Netherlands 1	Switzerland 6
Brazil 3	India 1	Norway 4	UK 28
Canada 7	Ireland 2	Peru 1	Ukraine 1
Chile 1	Italy 6	Poland 1	USA 55

*Africa 2 (2/billion pop.)*

*Asia 32 (7/billion pop.)*

*Europe 130 (170/billion pop.)*

*N. America 62 (180/billion pop.)*

*Oceania 3 (80/billion pop.)*

*S. America 8 (15/billion pop.)*

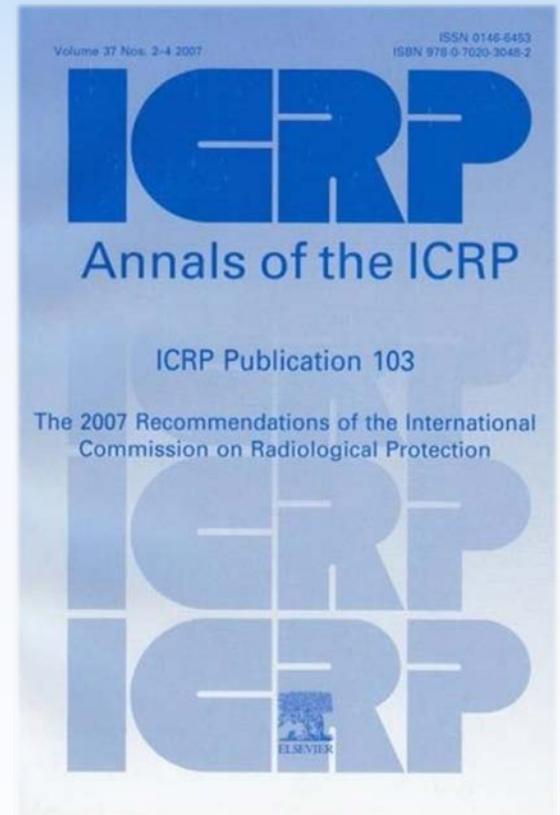
# ICRP Mission

Advance **for the public benefit** the science of **radiological protection**, in particular by providing **recommendations and guidance** on all aspects of protection against ionising radiation



# System of Radiological Protection

- Most recently updated in *ICRP Publication 103* (2007)
- Based on **science, value judgments, and experience**
- Forms the basis of radiation safety standards, legislation, guidance, programmes, and practice worldwide



# Strategic Progress

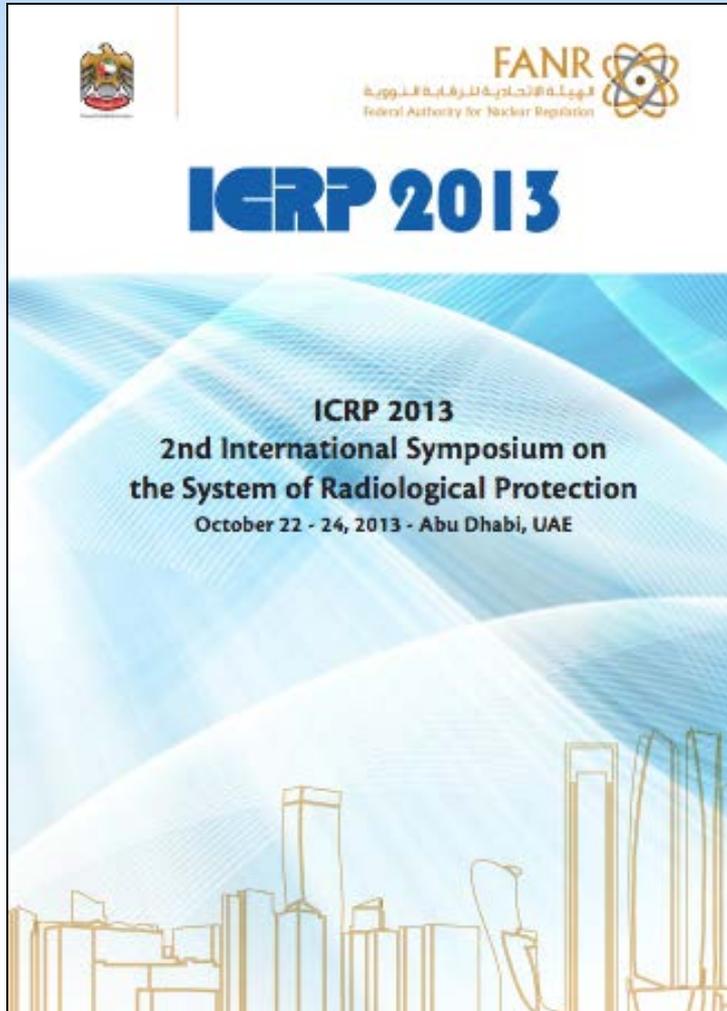


- Biennial ICRP international **symposia** are a regular feature
- New Committee members are recruited through **open nominations**
- **Interactions with other organisations** have been strengthened through implementation of a new system of formal relations
- Efforts to **recommend research** needed to strengthen the System of Radiological Protection have begun
- Possibilities for **ICRP publications at low or no cost** are being investigated
- Reviewing Constitution and Rules to ensure best practices in **governance** of ICRP
- **Financial investment** to achieve these and other objectives is being sought through a fund raising campaign

# ICRP 2013



# ICRP 2013



- 300 participants from 37 countries
- 1 introductory and 5 technical sessions
- 37 presentations
- Post-symposium survey: 91% extremely or very satisfied overall
- Proceedings will be published in the Annals of the ICRP

# ICRP

## Programme of Work

# Continuing Programme of Work

- **Support** and further **elaborate** the System of Radiological Protection of *Publication 103*
  - Provide technical information needed to implement the System (e.g. dose coefficients)
  - Elaborate within exposure types (occupational, public and medical) and situations (planned, existing, and emergency)
- **Assess advances in scientific understanding and changing values that may influence evolution of the System**
  - Science: e.g. revised radiation and tissue weighting factors
  - Values: e.g. greater emphasis on environmental protection

# Since ICRP Publication 103

## Providing Necessary Technical Information

- P 106 Radiation Dose to Patients from Radiopharmaceuticals
- P 107 Nuclear Decay Data for Dosimetric Calculations
- P 110 Adult Reference Computational Phantoms
- ICRU Report 84 Reference Data for the Validation of Doses from Cosmic-Radiation Exposure of Aircraft Crew
- P 114 Transfer Factor Values for ... Reference Animals and Plants ...
- P 116 Conversion Coefficients ... for External Radiation Exposures
- P 119 Compendium of Dose Coefficients based on ICRP Publication 60
- Occupational Intakes of Radionuclides Parts 1, 2, and 3 (approved)



# Since ICRP Publication 103

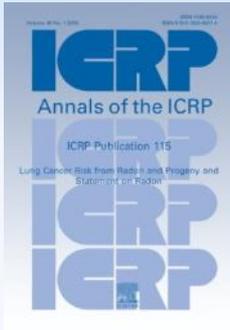
## Elaborating on Specific Circumstances

- P 104 Scope of Radiological Protection Control Measures
- P 105 Radiological Protection in Medicine
- P 108 Reference Animals and Plants
- P 109 Emergency Exposure Situations
- P 111 Living in Long Term Contaminated Areas
- P 112 Radiotherapy with New Technologies
- P 113 Education and Training ...
- P 117 Fluoroscopically Guided Procedures ...
- P 120 Cardiology
- P 121 Paediatric Diagnostic and Interventional Radiology
- P 122 Geological Disposal ...
- P 123 Assessment of Radiation Exposure of Astronauts ...
- P 124 Protection of the Environment ... (in press)
- P 125 ... Security Screening (in press)

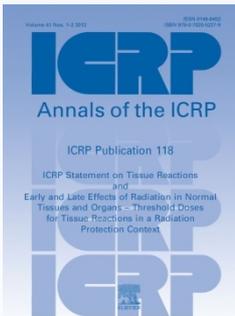


# Since ICRP Publication 103

## Assessing Advances in Understanding



- P 115 Lung Cancer Risk from Radon and Progeny and Statement on Radon
- P 118 ICRP Statement on Tissue Reactions / Early and Late Effects of Radiation in Normal Tissues and Organs – Threshold Doses for Tissue Reactions in a Radiation Protection Context



# Abu Dhabi Meeting Results



- Donald Cool elected MC Member & C4 Chair
- Reports Approved:
  - For publication: Occupational Intakes of Radionuclides Parts 1, 2, and 3
  - For consultation: RP in Ion Beam Radiotherapy
- Task Groups Established:
  - TG91 Risk at Low-dose and Low-dose Rate
  - TG92 Terminology and Definitions
  - TG93 Update of P109/P111
  - TG94 Ethics of RP

**ICRP** INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION  
ICRP ref: 4839-1596-3414  
Released November 4, 2013

**ICRP Main Commission Meeting**  
October 18-20, 2013 – Abu Dhabi, UAE

With the departure of Abel González from the Main Commission in July 2013, **Donald Cool** was elected to the Main Commission effective immediately, and appointed Committee 4 Chair effective November 1, 2013.

The draft reports *Occupational Intakes of Radionuclides Parts 2 and 3* were approved for publication in the Annals of the ICRP, expected to be released along with Part 1 in 2014.

The draft report *Radiological Protection in Ion Beam Radiotherapy* was approved for public consultation.

Task Group 94 was established on *Ethics of Radiological Protection*, chaired by Committee 4 member Deborah Oughton.

Issues identified and recommendations of *Task Group 84 on Initial Lessons Learned from the NPP Accident in Japan* were reviewed, noting that many are already addressed by the recently established *Task Group 93 on Update of ICRP Publications 109 and 111*. Committee Chairs were tasked with reporting on progress on all issues and recommendations of Task Group 84 at the next meeting of the Main Commission.

Building on the success of the open nominations and voting procedures used to select Committee members for the current term (2013-2017), the Main Commission began a formal review of the *ICRP Constitution and rules*, including but not limited to aspects related to membership eligibility and selection.

The Main Commission invited senior representatives of organisations in formal relations with ICRP to a special *liaison organisation session*, and discussed current issues and possible future collaboration. Representatives in attendance were from the European ALARA Network, European Nuclear Installations Safety Standards Initiative, European Platform on Preparedness for Nuclear and Radiological Emergency Response and Recovery, Heads of the European Radiological Protection Competent Authorities, International Labour Organisation, International Radiation Protection Association, OECD Nuclear Energy Agency, World Health Organisation, and World Nuclear Association. Regrets were received from the European Commission, and International Atomic Energy Agency.

ICRP's 2<sup>nd</sup> *International Symposium on the System of Radiological Protection* was held immediately after the Main Commission meeting. The symposium, hosted by the UAE Federal Authority for Nuclear Regulation, attracted nearly 300 participants from 37 countries.

Plans for ICRP 2015, the 3<sup>rd</sup> *International Symposium on the System of Radiological Protection*, to be held in Seoul, Korea, October 20-22, 2015, are already underway.

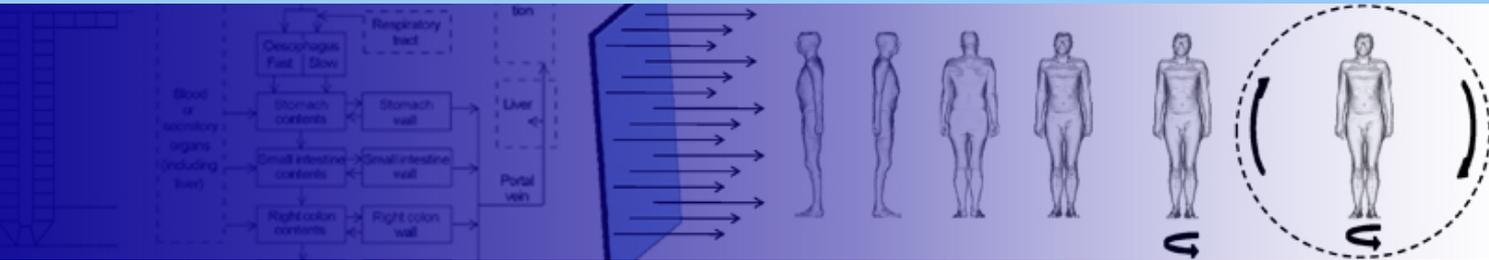
[www.icrp.org](http://www.icrp.org)

## In Progress

- [TG64](#) Cancer Risk from Alpha Emitters (Pu & U)
- [TG75](#) Stem Cell Radiobiology
- [TG91](#) Radiation Risk Inference at Low-dose and Low-dose Rate Exposure for Radiological Protection Purposes

## On the Radar

- Epigenetics



## In Progress

- Paediatric Reference Computational Phantoms
- Pregnant Female and Fetus Reference Computational Phantoms
- Radiation Transport Calculations (SAFs) for: Adult Phantoms, Paediatric Phantoms, and Pregnant Female and Fetus Phantoms
- **TG90** External Dose Conversion Coefficients for the Public
- Occupational Intakes of Radionuclides, Parts 1, 2, 3, 4 and 5
- Internal Dose Coefficients for Members of the Public, Parts 1 and 2
- In utero Internal Dose Coefficients for Maternal Intakes
- Breast-feeding Infant Internal Dose Coefficients for Maternal Intakes
- **TG 79** Use of Effective Dose



## In Progress

- **TG36** Dose to patients from radiopharmaceuticals
- **TG85** Mitigating second cancer risks
- **TG86** Justification in imaging of asymptomatic individuals
- **TG87** RP in Ion Beam Radiotherapy
- **TG88** RP in Cone-beam CT
- **TG89** Occupational RP in Brachytherapy

## On the Radar

- Justification: framework for justification in medical uses
- Occupational RP in interventional procedures (fluoroscopy guided and CT guided)
- RP radiopharmaceutical therapy
- DRLs for diagnostic and interventional imaging



## In Progress

- **TG76** NORM
- **TG81** Radon
- **TG83** Aircraft Crew
- **TG93** Update of P109/P111
- **TG94** Ethics of RP

## • On the Radar

- Surface and near-surface disposal
- Contaminated Sites
- Publications for “end users”
- Tolerability of risk



## In Progress

- [TG72](#) RBE and reference animals and plants
- [TG74](#) More realistic dosimetry for non-human species

## On the Radar

- RAP monographs
  - anatomy, physiology and life cycle, stable element ratios, exposure scenarios including background exposure, transfer factors, effects, and models
- Radionuclide concentration basis for protection of environment
- Defining situation-specific representative organisms



# ICRP 2015

**3rd International Symposium  
on the System of Radiological Protection**

October 20-22, 2015, Seoul, Korea

ICRP 2015  
3rd International  
Symposium  
on the System of  
Radiological  
Protection  
Seoul, Korea



ICRP 2015  
SAVE THE DATE  
2015•10•20  
Seoul

Hosted by the  
Korean Association for  
Radiation Protection



# Specific Topics of Interest

# Symposium – Lessons of Fukushima

- Internal and external exposures are lower than initially feared
- There is a large distribution of individual exposures: looking at the average is insufficient
- It is essential to measure internal and external doses for each individual
- It is important to find the people in the tail of the distribution and to explore with them protective actions to reduce their doses

# Symposium – Lessons of Fukushima

- ICRP system seems to work but problem in implementation e.g. meaning of reference levels
- Failure in community involvement for conducting better rehabilitation
- Ethics is essential to go beyond scientific uncertainties

# ICRP TG93

- TG 93 - Update of ICRP Publication 109 and 111
- Issues to be addressed:
  - Justification for and optimization of emergency decisions
  - Characterization of the radiological situation
  - Protection of emergency and recovery responders
  - Decontamination and waste management strategies
  - Withdrawal of emergency protective actions
  - Protection of pregnant women and children
  - Information sharing with stakeholders
  - Emergency and recovery preparedness
- The objective is to have the 2 updated Publications ready for the 5th Anniversary of Fukushima

# Ethics of Radiation Protection

- **Benevolence:** do more good than harm
- **Prudence:** keep exposure ALARA
- **Justice:** reduce inequities
- **Dignity:** involve stakeholder
  
- Two values to be carefully considered:  
**reasonableness** and **tolerability**

# ICRP

[www.icrp.org](http://www.icrp.org)



INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION