International Commission on Radiological Protection

Committee 1 (C1): Radiation Effects

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USA

ICRP Mission

Advance for the public benefit the science of radiological protection by providing recommendations and guidance on all aspects of protection against ionizing radiation.

ICRP Structure

Main Commission

Scientific Secretariat

Committee 1
Effects

Committee 2
Doses

Committee 3
Medicine

Committee 4
Applications

Committee 5
Environment

Task Groups

Working Groups

Development of Standards

SCIENCE
Doses and effects

➔ UNSCEAR

PRINCIPLES
Philosophy and policy

➔ ICRP

Based on **science, value judgments,** and **experience**

STANDARDS
Regulatory practicalities

➔ IAEA

Plus ancillary related organizations [3]

Missing: Sarah Darby, Nori Nakamura & Richard Wakeford

Guest attendees: Ohtsura Niwa and Jolyon Hendry

Departed members: Fiona Stewart and Ping-kun Zhou

Open Nominations and Election Process
C1 Membership 2013

William F. Morgan, USA (Chair)
Alice Sigurdson, USA (Vice Chair)
Werner Ruhm, Germany (Secretary)

Tamara Azizova, Southern Urals
Nobuiko Ban* Japan
Simon Bouffler* UK
Ranajit Chakraborty, USA
Wolfgang Doerr* Austria
Michael Hauptmann*, Netherlands
Dominique Laurier*, France
Preetha Rajaraman* India
Sisko Salomaa, Finland
Dan Stram, USA
Quanfu Sun* China
Margot Tirmarche, France
Richard Wakeford, UK

* Seven (7) new members ï welcome!

Membership list and CVôs will be available on the ICRP website

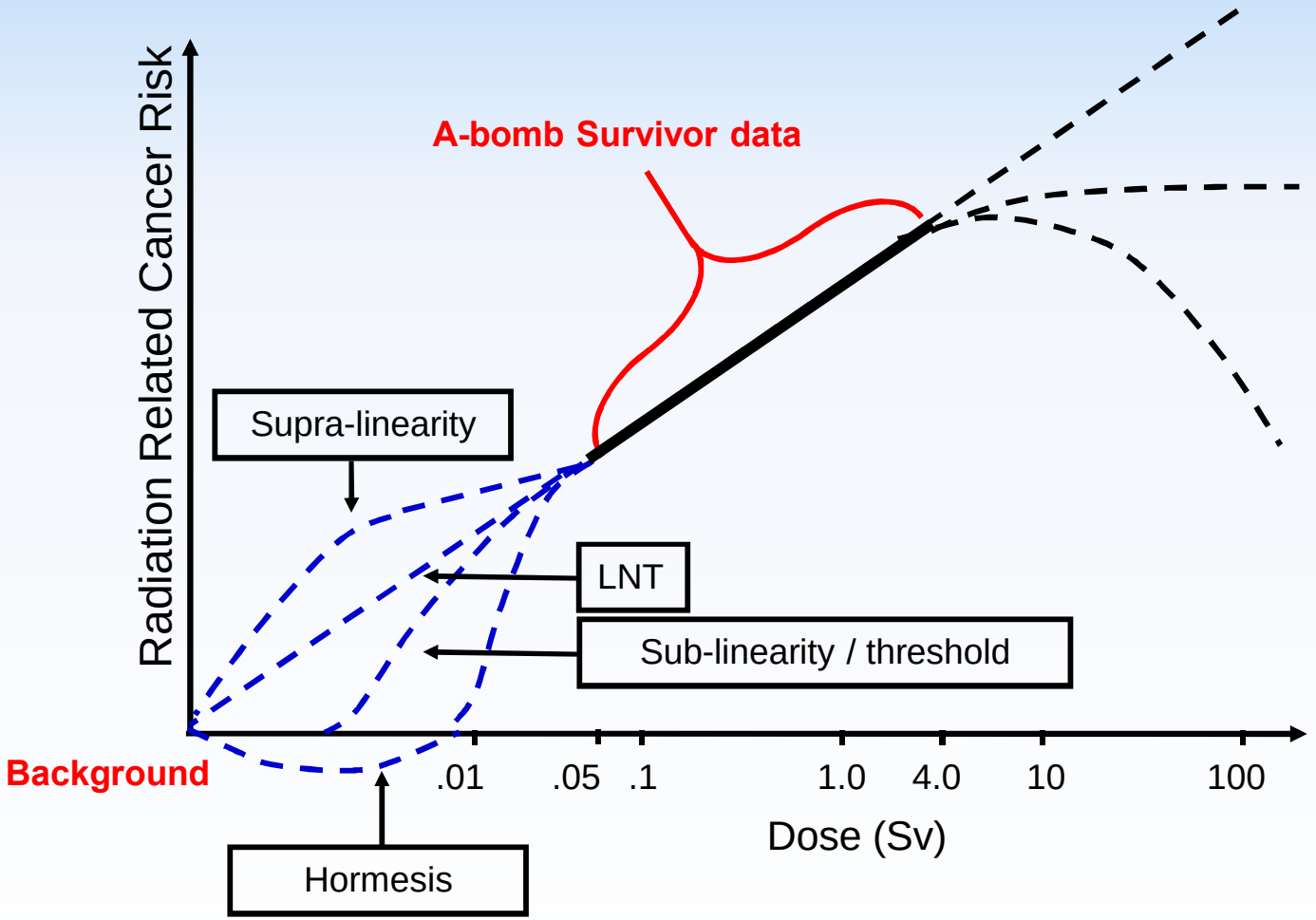
Minutes of meetings also available on the ICRP website

C1 considers the risk of induction of cancer and heritable disease (stochastic effects) together with the underlying mechanisms of radiation action

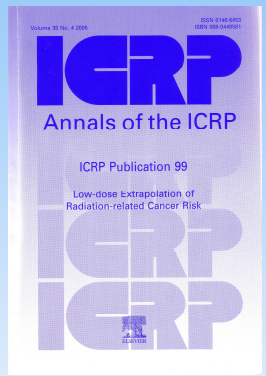
C1 also considers the risks, severity and mechanisms of induction of tissue / organ damage and developmental defects (tissue reactions; deterministic effects)

Emphasis on low dose (< 100 mSv)

The dilemma for radiation protection: what is the scientific basis for radiation standards to protect the public from exposures to low levels of ionizing radiation (<0 100 mSv) where there are considerable uncertainties in the epidemiological data.



So Where Are We Now…?
ICRP Publication 99, (2005)
Conclusions, page 112



tion has not been answered scientifically and remains open.

(264) When considered as a whole, the emerging results with regard to a radiation-related adaptive response, genomic instability, and bystander effects suggest that the risk of low-level exposure to IR is uncertain, and a simple extrapolation from high-dose effects may not be wholly justified in all instances. However, a better understanding of the mechanisms for these phenomena, the extent to which they are active in vivo, and how they are inter-related is needed before they can be evaluated as factors to be included in the estimation of potential risk to the human population of exposure to low levels of IR. It should be recognised that information from direct epidemiological measure of cancer risk will, by definition, include any potential contribution from these mechanistic processes, and may therefore provide insights about them, subject to the constraints of low statistical power at low doses.

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How do we achieve this?

Continue to monitor data from the atomic bomb survivors (LSS) for both stochastic and deterministic effects, particularly for incidence.

Consider the use of biologically-based dose-response **models** for assessing effects at low doses.

Be aware of international programs: US, EU, Japan, Korea, India etc.

C1 Responsibilities / Activity

Review the UNSCEAR (and other) documents on non-targeted and non-cancer effects for impact on risk.

Integrate dosimetry, epidemiology, current biology and technology

Review HPA (PHE) document on human radiosensitivity for potential impact on individual susceptibilities.

Individuals will differ in radiosensitivity and their perception of risk

Rapid advances in 'omic technologies and personal medicine

Legal & ethical issues, selected populations

C1 Responsibilities / Activity

Follow dosimetry and exposure discussions, DREF, DDREF.

Advances in radiation biology - damage recognition, DNA repair, and impact of epigenetic effects.

Long term inflammatory responses and non-cancer effects

Dialogue on heritable effects

TG 64: Cancer Risk from Alpha Emitters

Chair: Margot Tirmarche, ASN, France.

Approved by MC in 2006.

2007 - proposed that a report be developed on radon and lung cancer with specific emphasis on discussion of reference levels, dose conversion factors and dose limits (input from C2 and C4).

The need was to reconcile the ICRP (1993) and UNSCEAR (2000) approaches for dose conversion.

ICRP Publication 115 (2010) : Lung Cancer Risk from Radon and Progeny and Statement on Radon.

Now extended to report on potential risks from plutonium, uranium, thorotrast and radium.

ICRP Publication 118 (2012)

ICRP Statement on Tissue Reactions / Early and Late Effects of Radiation in Normal Tissues and Organs ï Threshold Doses for Tissue Reactions in a Radiation Protection Context.

Fiona Stewart (Chair)

Jolyon Hendry	Alex Akleyev
Martin Hauer-Jensen	Tom MacVittie
Norman Kleiman	

Corresponding members

Colin Muirhead	Roy Shore
Kiyo Mabuchi	Berthe Aleman
Hamish Wallace	Angela Edgar
John Cooper	

C1 symposium session, Tuesday, October 22, 13:00 hours

Tissue reactions: The road from science to protection

Co-chairs: William F. Morgan, C1 (USA); Sisko Salomaa C1 (Finland)
Tuesday, October 22 at 13:00 hours

13:00-13:10 Introduction
13:10-13:20 Wolfgang Doerr , C1 (Austria)
The biology of tissue reactions
13:20-13:30 Jolyon Hendry, former C1, (UK)
Threshold doses and circulatory disease risks
13:30-13:40 Shinichiro Miyazaki (World Nuclear Association)
General tissue reactions and implications for radiation protection
13:40-13:50 Simon Bouffler, C1 (UK)
The lens of the eye, exposures in the UK medical sector and mechanistic studies of radiation effects
13:50-14:00 Wesley Bolch, C2 (USA)
Dosimetric models of the eye and eye lens and their use in assessing dose coefficients for ocular exposures
14:00-14:10 Miroslav Pinak, (IAEA)
Dose limits to the lens of the eyes: New limit for the lens of the eye - International Basic Safety Standards and related guidance
14:10-14:20 Eliseo Vaño, C3 (Spain)
Implications in medical imaging of the new ICRP thresholds for tissue reactions
14:20-14:30 Laurence Dauer, C3 (USA)
Implications for radiotherapy of the New ICRP thresholds for tissue reactions
14:30-14:40 Ted Lazo (OCED, France)
Non-cancer effects: Science and values aspects of protection decisions
14:40-14:50 Marie-Claire Cantone IRPA, (Italy)
Implications of the implementation of the revised dose limit to the lens of the eye: The view of the IRPA professionals
14:50-16:00 Panel Discussion: Please participate with lots of questions

TG 75: Stem Cell Radiobiology

Co-Chairs: Jolyon Hendry & Ohtsura Niwa

Established to review current state of knowledge of stem cell radiobiology and potential impacts on cancer risk.

An increase in knowledge of stem cell biology but little new information on radiation effects on stem cells.

Emphasis is on stem cell radiobiology in relation to carcinogenic radiation risk.

Document in final stages of preparation. Still some issues to be resolved. Anticipated submission to Main Commission and external review later this year.

TG 91: Radiation Risk Inference at Low-dose and Low-dose Rate Exposure for Radiological Protection Purposes

Chair: Werner Ruhm, C1 (Germany)

Members

Tamara Azizova, C1 (Southern Urals)
Simon Bouffler, C1 (UK)
Roy Shore (former C1, Japan)
Gayle Woloschak (USA)

Corresponding members

Bernd Grosche (Germany)
Kaz Sakai, C5 (Japan)
Quanfu Sun, C1 (China)

Consultant

Abel Gonzalez (Argentina)

TG 91: Radiation Risk Inference at Low-dose and Low-dose Rate Exposure for Radiological Protection Purposes (TG 84)

The Task Group will review the estimation of risk coefficients and recommend:

(1) Whether it is desirable to continue to estimate risk at low doses by assessing the slope of the dose response at high doses and then applying a DDREF reduction factor.

(2) Whether such coefficients are applicable to acute, protracted and prolonged exposure or need correction.

Task Group 92: Terminology & Definitions

Chair: William F. Morgan, C1 (USA)

Members

Jai-ki Lee, Main Commission (Korea)
Dominique Laurier, C1 (France)
Frank Wissman, C2 (Germany)
Pedro Ortiz Lopez, C3 (Austria)
Donald Cool, C4 (USA)
Almudena Real, C5 (Spain)

Corresponding member

Derek Delves, IAEA (Austria)
Ted Lazo, OECD (France)

Consultant

Abel J. Gonzalez (Argentina)

Please meet Wednesday in C1 meeting room at noon

Task Group 92: Terminology & Definitions

Over many years the terminology and definitions of specific terms used in ICRP publications have evolved, and in some instances have been used inconsistently. This Task Group will review the terminology and definitions from Publication 103 onward and update/revise as required. This will occur in two phases:

(1) Terminology and definitions agreed upon.

(2) Those not agreed upon or inconsistent.

It is envisaged that the updated terminology and definitions will be a web-based resource for future use.

Translation(s) and interpretation(s)??

Next C1 meeting

Beijing, China. May, 27 ï 30, 2014

Co hosts

Ping-Kun Zhou (former C1)

Quanfu Sun (C1)

Comments and questions

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