International Commission on Radiological Protection

Committee 1 (C1): Radiation Effects

William F. Morgan
Pacific Northwest National Laboratory
USA

Friday, October 04, 2013 11:50 AM
Good morning everyone!

Effective immediately, PNNL is canceling all foreign travel and restricting domestic travel to only mission-essential trips for October. This includes not only overhead and DOE-funded trips but travel on all funding sources. Other National Laboratories have already followed suit. Jim and I will have to re-approve all travel until the restriction is lifted. We will review approved ATRs week by week and be in contact with travelers to determine the mission-sensitive nature of the trips.
Please let me know if you have any questions

Katrina

Friday, October 04, 2013 11:52 AM

Bill
I believe you have foreign travel coming up shortly. All foreign travel is being cancelled by the laboratory and hence you will not be allowed to take this trip. I know that this is incredibly disruptive but this is being applied across the lab as well as at other labs.
Jim

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

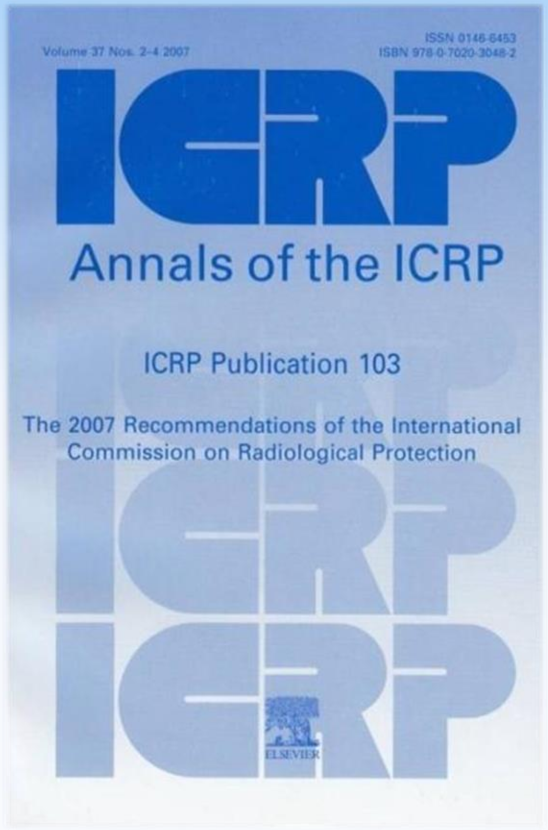
STANDARDS
Regulatory practicalities → IAEA

System of Radiological Protection

Publication 103 (2007)

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

Forms the basis of radiation safety standards, legislation, guidance, programs, and practice worldwide



Volume 37 Nos. 2-4 2007

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ICRP

Annals of the ICRP

ICRP Publication 103

The 2007 Recommendations of the International Commission on Radiological Protection

ELSEVIER

Aim of the Recommendations

Radiation protection

Keeping up with technology

Keeping up with advances in the field

e.g., non cancer effects

Natural sources of radiation

Protecting the environment

Maintaining expertise in the radiation sciences and protection in general

Missing: Sarah Darby, UK
Nori Nakamura, Japan
Richard Wakeford, UK

Guest attendees: Ohtsura Niwa and Jolyon Hendry

Departing members: Fiona Stewart and Ping-kun Zhou

Open Nominations and Election Process

C1 Membership 2013

William F. Morgan, USA (Chair)
Werner Ruhm, Germany (Secretary)
Tamara Azizova, Southern Urals
Simon Bouffler* UK
Wolfgang Doerr* Austria
Dominique Laurier*, France
Sisko Salomaa, Finland
Quanfu Sun* China
Richard Wakeford, UK

Alice Sigurdson, USA (Vice Chair)

Nobuiko Ban* Japan
Ranajit Chakraborty, USA
Michael Hauptmann*, Netherlands
Preetha Rajaraman* India
Dan Stram, USA
Margot Tirmarche, France

* New members
Membership list and CV’s 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 of induction of tissue / organ damage and developmental defects (tissue reactions; deterministic effects)

C1 Responsibilities / Activity

Review the UNSCEAR and NOTE documents on non-targeted effects for potential impact on risk (Salomaa)

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

Monitor epidemiological data and UNSCEAR review on non-cancer effects

C1 Responsibilities / Activity

Follow dosimetry and exposure discussions, DREF, DDREF.

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

Long term inflammatory responses

Dialogue on heritable effects

Keep abreast of technology

TG 64: Cancer Risk from Alpha Emitters

Chair: Margot Tirmarche, ASN, France.

Established 2006 to report on assessment of recent published literature.

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.

TG 64: Cancer Risk from Alpha Emitters

Chair: Margot Tirmarche, ASN, France.

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

Project delayed due to closure of West Lakes (UK) awaiting joint analysis of Sellafield and Mayak workers.

The dosimetry contributions of C2 essential

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 (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

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 (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)

Consultant

Abel J. Gonzalez (Argentina)

Task Group 92: Terminology & Definitions

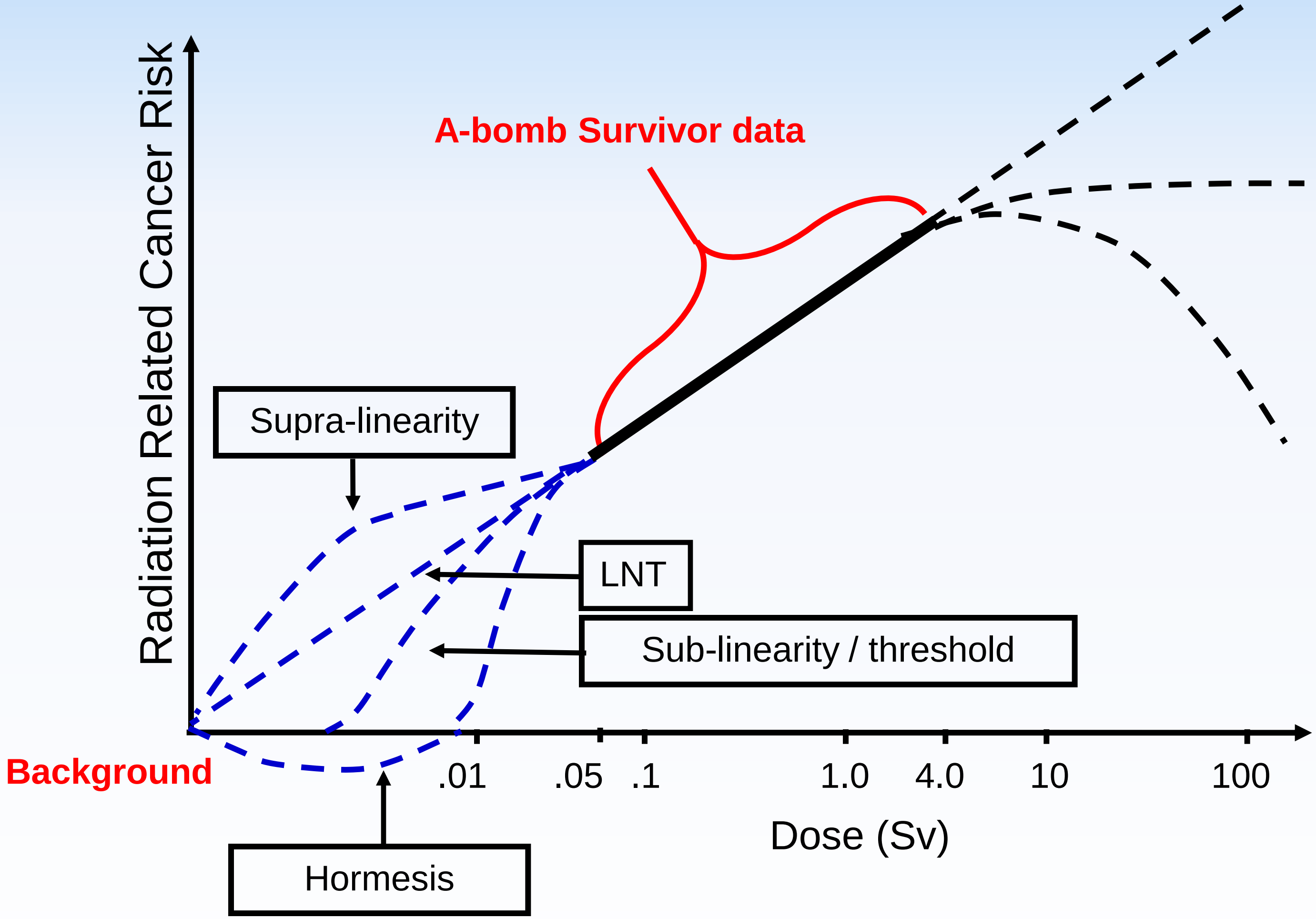
Over many years the terminology and definitions of specific terms used in ICRP publications have evolved, and in some instances have been used inconsistently. This Task Group will review the terminology and definitions from Publication 103 onward and update/revise as required. This will occur in two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

(1) Terminology and definitions agreed upon.

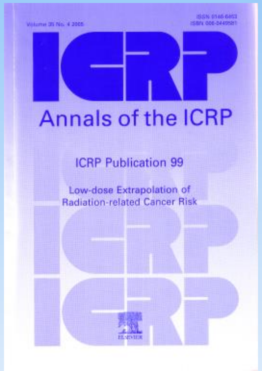
(2) Those not agreed upon or inconsistent.

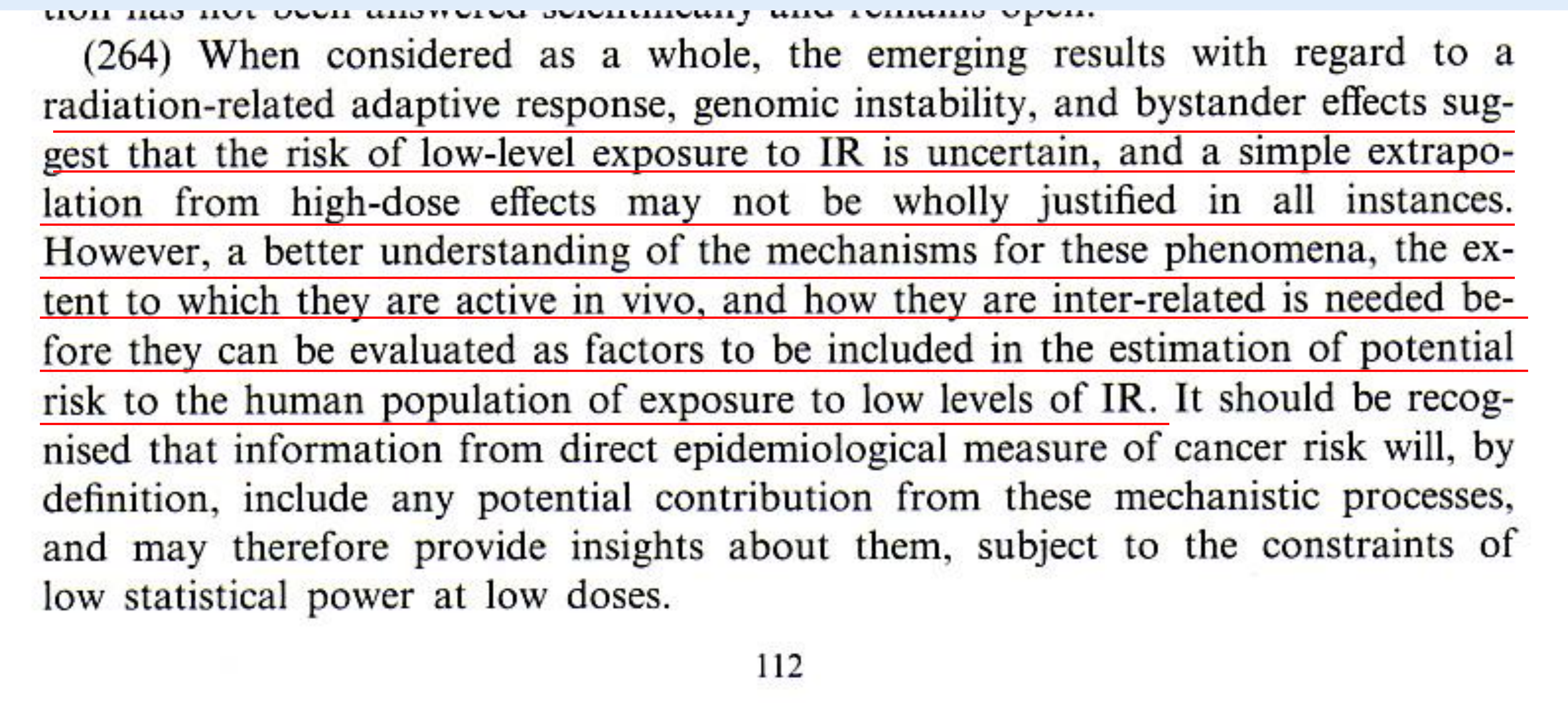
It is envisaged that the updated terminology and definitions will be a web-based resource for future use.

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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Don’t hesitate to contact me

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Tissue reactions: The road from science to protection

Co-chairs: William F. Morgan, C1 (USA); Zhanat Carr, WHO (Austria)
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 (OEC, 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