Evolution of Radiological Protection System: Ethical Review

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ICRP C4

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This presentation has neither been approved nor endorsed by ICRP

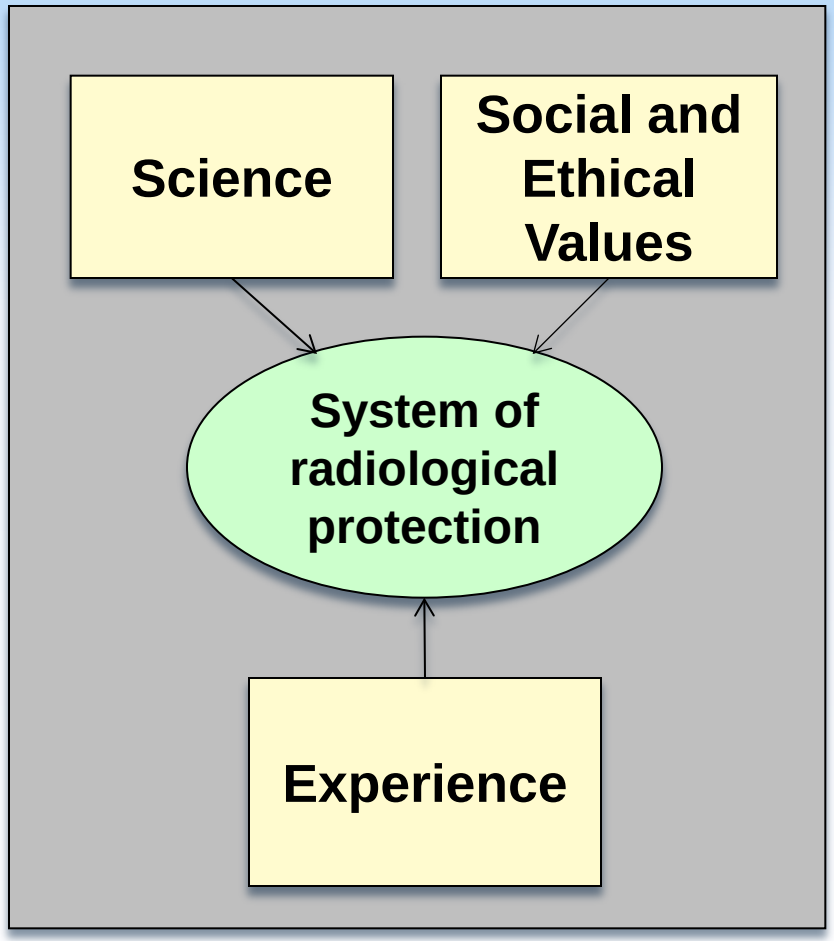
Content of the presentation

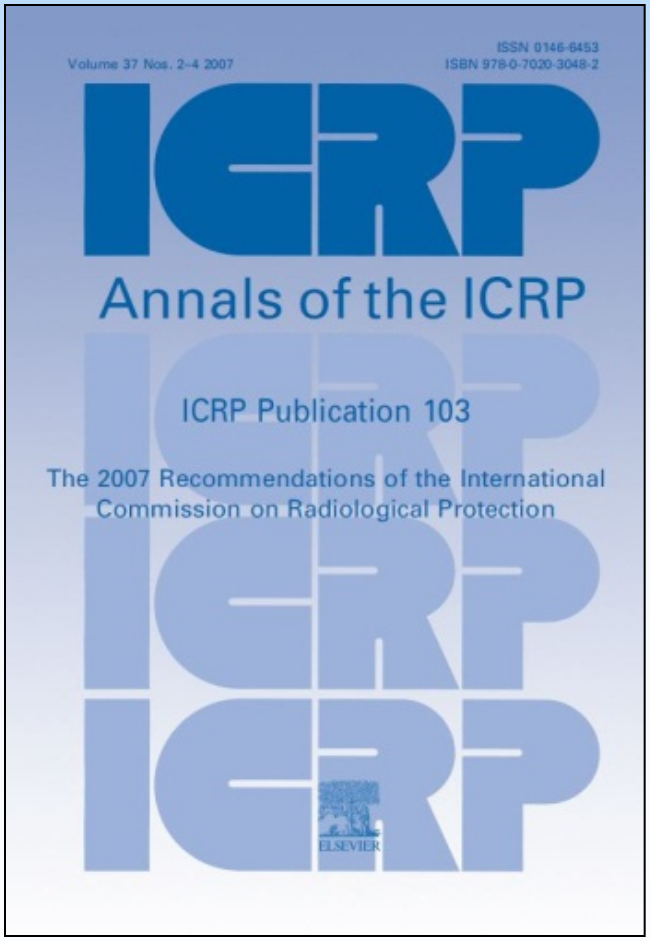
1. Some general considerations on science, ethics and radiological protection principles

2. The current ICRP initiative on the ethics of radiological protection

3. Conclusion

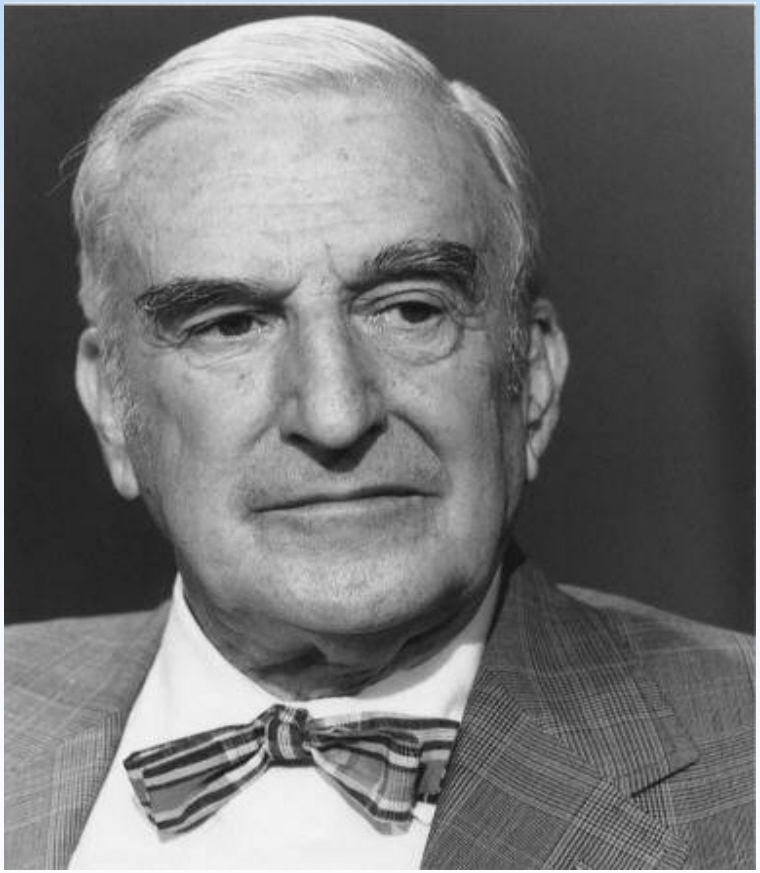
The three pillars of the system of radiological protection





Publication 103

Science and ethics in radiological protection
- A long tradition -



Lauriston S. Taylor (1902 – 2004)
Chair of ICRP from 1937 to 1950

"Radiation protection is not only a matter for science. It is a problem of **philosophy**, and **morality**, and the utmost **wisdom**."

The Philosophy Underlying Radiation Protection
Am. J. Roent. Vol. 77, N° 5, 914-919, 1957
From address on 7 Nov. 1956

Wisdom

- A basic definition of wisdom is the **judicious application of knowledge**
- As a **virtue** wisdom is the disposition to perform actions with the highest degree of adequacy under any given circumstances
- In its popular sense, wisdom is attributed to a person who takes **reasonable** decisions

Science and judgements in radiological protection

Rolf M. Sievert (1896 - 1966)
Chair of ICRP from 1956 to 1962

"The establishment of maximum permissible radiation levels is a non scientific task, which must be based primarily on **scientific knowledge and judgement**."

The Work of the International Commission on Radiological Protection

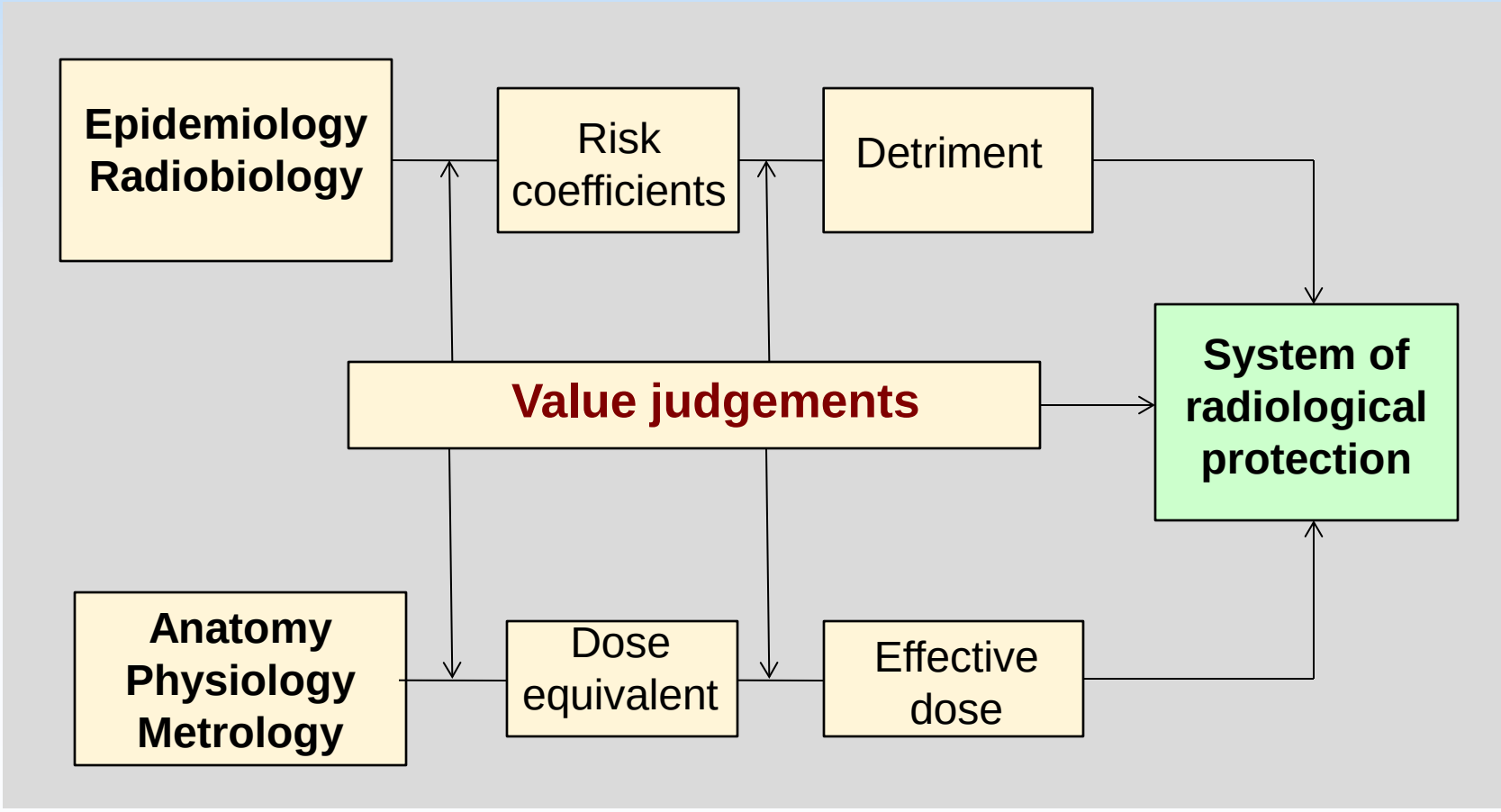
United Nations International Conference on The Peaceful Uses of Atomic Energy, Geneva, 1-13 September 1958, Vol. 21, pp. 3-7

Science and value judgements in radiological protection

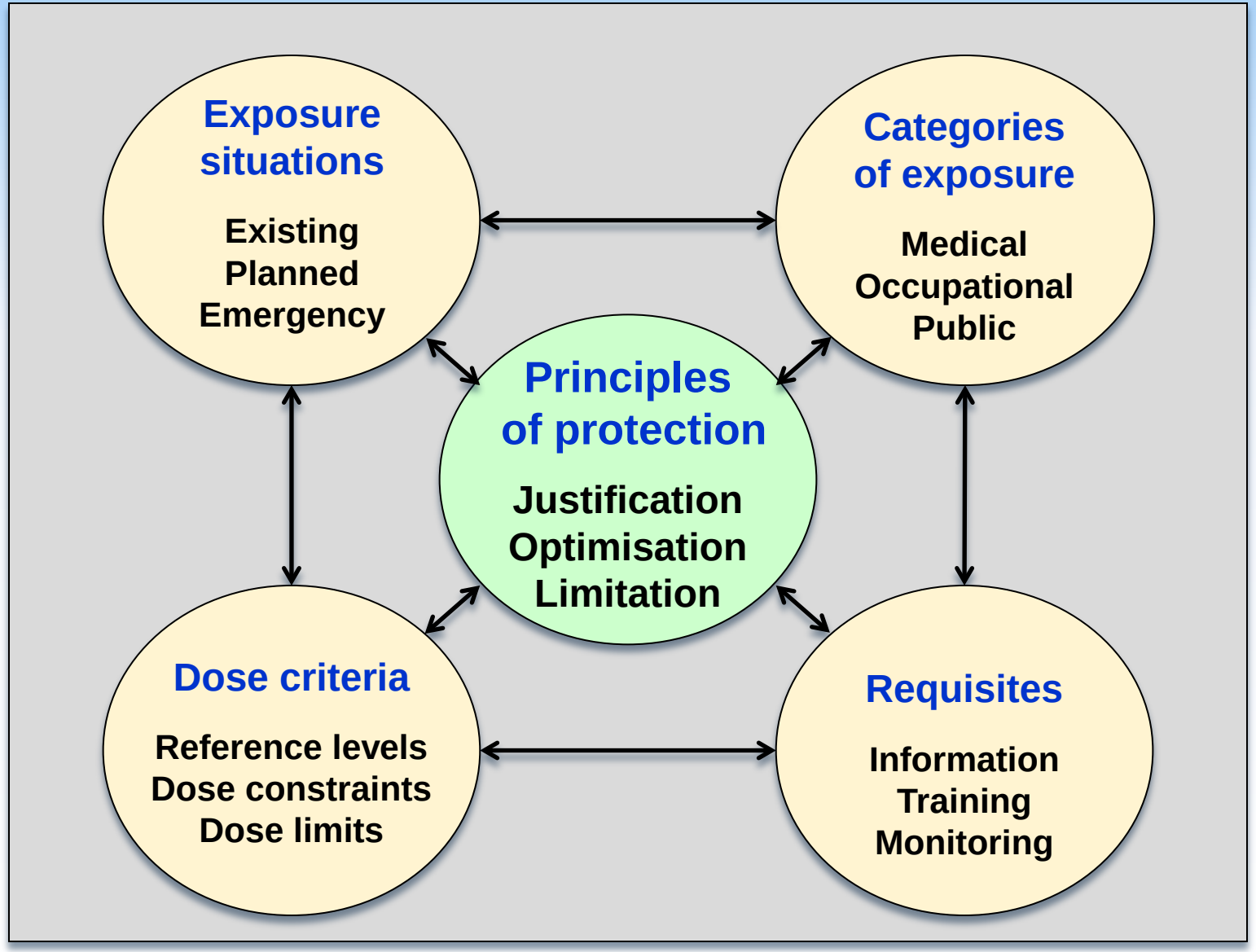
« The Recommendations are based on **scientific knowledge and on expert judgement**. Scientific data, such as those concerning health risks attributable to radiation exposure, are a necessary prerequisite, but **societal and economic aspects** of protection have also to be considered. All of those concerned with radiological protection have to make **value judgements...** »

(ICRP Publication 103, § 27)

The scientific basis of the system of radiological protection



The system of radiological protection



The starting of the current ICRP initiative on ethics

- ICRP Committee 4 (C4) established a Working Party (WP) to reflect on the ethics of radiological protection at the general meeting of the Commission in Porto in November 2009

- The WP reviewed the ethical theories and concluded that the system of radiological protection is rooted in the 3 major theories of ethics. This system is a construction attempting to combine the respect of **individual rights** (deontological ethics) and the pursuit of **collective interest** (utilitarian ethics) and to act **judiciously and reasonably** (virtue ethics)

- The WP also identified the importance for ICRP to confront the the “Western” ethics to the moral judgements from the **other cultural backgrounds** in the world

The ICRP initiative on ethics

- In autumn 2012 in Fukushima, Japan, the ICRP **Main Commission** (MC) endorsed the C4 proposal :
  - to prepare the **Terms of Reference** for a **Task Group** on the ethics of radiological protection and also
  - to develop the work in close **cooperation with specialists of ethics and radiation professionals** through IRPA Associate Societies in the different regions of the world
- A cooperation proposal was sent to **IRPA** late 2012 and an agreement was established between ICRP and IRPA early 2013
- The MC approved the creation of **Task Group 94** on the ethics of radiological protection in Abu Dhabi in October 2013

Terms of Reference of TG 94

- The Task Group will develop an **ICRP Publication** presenting the ethical foundations of the system of radiological protection recommended by the Commission.
- The purpose of this Publication is to:
  - **Consolidate** the Recommendations
  - **Improve** the understanding of the system
  - **Provide a basis for communication** on radiation risk and its perception

Task Group 94 members

Full members:

Deborah Oughton, Norway (Chair)

Marie-Claire Cantone, Italy
Kunwoo Cho, Korea
Sven Ove Hansson, Sweden
Chieko Kurihara-Saio, Japan
Thierry Schneider, France
Richard Toohey, USA
Sidika Wambani, Kenya
Friedo Zölzer, Czech Republic

Corresponding members:

Renate Czarwinski (IRPA)
Bernard Le Guen (IRPA)
Emilie Van Deventer (WHO)

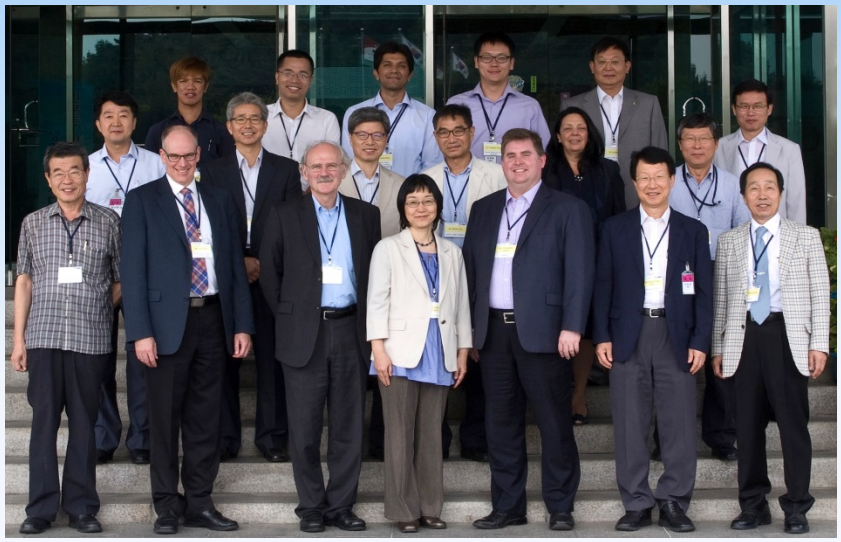
Critical reviewers C4:

- François Bochud, Switzerland
- John Takala, Canada

Critical reviewers MC:

- Car-Magnus Larsson
- Eliseo Vano

The first workshops on the ethical dimensions of the radiological protection system



Daejeon, Korea, August 2013

Milan, Italy, December 2013

London, UK, June 2014

Baltimore, US, July 2014

Related Meetings

- AOCRP-4, Kuala Lumpur, Malaysia, 12-16 May 2014
- 2nd International Symposium on Ethics of Environmental Health, Budweiz, Czech, 15-19 June 2014

- Fourth European IRPA Congress, Geneva, Switzerland, 23-27 June 2014

The principles of radiological protection

- **The principle of justification.** Any decision that alters the radiation exposure situation should **do more good than harm**
- **The principle of optimisation of protection.** All exposures should be kept **as low as reasonably achievable**, taking into account economic and societal factors with restrictions on individual exposure to **avoid inequities** between individuals

The principles of justification and optimisation apply universally

- **The principle of application of dose limits.** The total dose to any individual from deliberately introduced sources other than medical exposure of patients should **not exceed the appropriate limits** recommended by the Commission

The principle of dose limitation applies only to planned exposure situations

The quest for reasonableness

- Recognition of uncertainties about the effects at low doses, **prudent attitude**, assumption of no-threshold - As Low As Possible - ALAP (1950)

- If an activity is justified, how far to reduce the risk without endanger the activity? - As Low as **Reasonably Achievable** - ALARA (1958)

  "As Low as" is the echo of the no-threshold assumption and "Reasonably Achievable" of the idea of avoiding carelessness and paralysis in front of the risk suspicion

- Attempt to found the reasonableness on the economic science: the **cost-benefit model** (1973)

- Combining **collective and individual** protection : the “beta value” (1988), pragmatism : **the ALARA procedure** (1999) and **democratic rights**: stakeholder involvement (2007)

The quest for tolerableness

- **Publication 26 (1977)** : the risk associated with dose limits compared with safe occupation for occupational exposures and risk regularly accepted in everyday life (e.g. public transport) for public exposures
- **Publication 60 (1990)**: introduction of the tolerability of risk model: difference between unacceptable, tolerable and acceptable. Use of a multi-criteria approach for the occupational dose limit and reference to the natural background for the public dose limit
- **ICRP Committee 4** is currently considering the implications of the situation–based approach introduced in **Publication 103** with regard to the tolerability of risk model

Stakeholder engagement

- ICRP mentions, **“for the first time, the need to account for the views and concerns of stakeholders when optimising protection”** in its 2007 recommendation (Pub 103, Editorial; see also § 224 in section 5.8 on optimisation)
- **Why to engage stakeholders?**
  - To take into account more effectively their **concerns and expectations** as well as the prevailing circumstances of the exposure situation
  - To adopt more **effective** and **fairer** protection actions
  - To favour their **empowerment** and **autonomy** i.e to promote their **dignity**
  - To maintain their **vigilance**

Where are we now? (1/2)

- The system of radiological protection is rooted in the 3 major theories of ethics. It combines the duty to act **wisely and reasonably** (**virtue ethics**) at the same time respecting both **individual rights** (**deontological ethics**) and the pursuit of **collective interest** (**utilitarian ethics**)

- A set of **central ethical values** identified:

❖ **Beneficence :** to do more good than harm/ avoid unduly limiting beneficial use of radiations/ protection of vulnerable groups

❖ **Prudence :** to keep exposure ALARA/avoidance of unnecessary risk/ assume there may be risks even at very low doses

❖ **Justice:** to reduce inequities in dose distribution/ ensure no individual carries an unacceptable share of risk or harm/ people get what they deserve/ protection of future generations

❖ **Dignity:** to involve stakeholders/treat people with respect/ self-help protection/ right to know

Where are we now? (2/2)

- **Reasonableness** and **tolerableness** are key values for the practical implementation of the system

- The series of meetings organized in conjunction with the ICRP Initiative on the ethical dimensions of radiological protection have shown that these cardinal values are **widely shared across cultures**

Next steps (1/4)

- Responses to the questions that emerged so far:
  - Q1. Should the objective of protection be broaden beyond "classical" health protection and consider the **well-being** of individuals (Cf. WHO definition of health)?
    - People need to be protected from harm AND to feel “safe”
    - Failure of broad acceptance of risk due to overemphasis of solely scientific approach
  - Q2. What are the **ethical responsibilities** of the radiation protection **professionals**?
    - Need to communicate radiological protection in simpler language
    - Need to address questions asked by the public
    - Do we have all the information to make the right choices?
    - Are we trusted to make the right decisions?
    - Do we make choices because of, or in spite of public mis-conceptions?
    - RP professionals’ duty to ensure that our System of RP is

    a) Fit for purpose b) Appropriate and reasonable c) Understandable

Next steps (2/4)

- Responses to the questions that emerged so far:
  - Q3. Are the **dignity and the protection of vulnerable groups** respected and achieved appropriately, especially in case of emergencies such as Fukushima?
    - Substantial number of elderly people have died because of compulsory evacuation
    - Are the evacuation and returning criteria appropriately recommended with due consideration to vulnerable groups not only children but also elderly?
  - Q4. What are the implications of **scientific uncertainty** to the ethical values such as autonomy and dignity?
    - Prudence, but how much?
    - Although the LNT model is based on the virtue of prudence, its application may lead to violations of the principles of respect for personal autonomy and dignity. …This appears to have violated a fundamental principle of medical practice: first, do no harm

Next steps (3/4)

- Analyse in greater depth the values and ethical procedures that structure the **different components of the system** of radiological protection
  - Types of exposure situations
  - Categories of exposure
  - Dose criteria
  - Requisites

- Elucidate the ethical dimensions of the ICRP Recommendations by providing **examples** of application of these values in the **different domains of practical implementation** of the system
  - Occupational health
  - Medicine
  - Environment
  - Radioactive waste management

Next steps (4/4)

Using a “draft” set of values:

- **Describe** each (and interactions between) in reference to the system of radiological protection

- **Examine** the broad acceptability of the set

- **Test** and **refine** the set through application to current and foreseeable problems

Forthcoming meetings

- Second European Workshop on the Ethical Dimensions of the Radiological Protection System, **Madrid, Spain, 4-6 February 2015** organized by the Spanish Society of Radiation Protection (**SEPR**) in cooperation with the Italian (**AIRP**), the French , (**SFRP**) and the UK (**SRP**) Societies of Radiation Protection

- SRP Annual General Meeting on the topic of “Radiation Protection Culture and Ethics”, **Eastbourne, England, 19-21 May 2015**

- Second Asian Workshop in Summer 2015 (In discussion)

- ICRP 2015: The 3rd International Symposium on the System of Radiological Protection, **Seoul, Korea, 20-22 October 2015**

Provisional timetable

- **Adoption of the TG 94 report by C4** in October 2015 in Seoul, Korea, at the occasion of the general meeting of the Commission in conjunction with the 3rd International Symposium on the System of Radiological Protection (ICRP 2015) with a **special session** on the ethics of radiological protection

- **Public consultation** beginning of 2016

- General discussion at the **IRPA14 Congress**, Cape Town, in May 2016

- **Adoption for publication** of the revised TG 94 report by the Main Commission in **autumn 2016** or **spring 2017**

SYSTEM OF RADIOLOGICAL PROTECTION
SCIENCE
VALUES
EXPERIENCE

Conclusion

Clearer ethical framework for the system of radiological protection

(1) Professionals and public better understand what the system is designed to achieve and why

(how is more a matter for professionals)

(2) Solid basis, together with science and experience, for evolution of the system

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