Eidgenössische Kommission für Strahlenschutz
Commission fédérale de radioprotection
Commissione federale della radioprotezione
Federal Commission on radiation protection

Workshop 2018

Les relations internationales de la Suisse en Radioprotection
Die internationalen Beziehungen der Schweiz im Strahlenschutz
Switzerland's international relations in Radiation Protection

Bern, April 13 2018

Opening address of Pascal Strupler, General Director of the FOPH, for the KSR workshop, April 13 2018, on "Switzerland's international relations in radiation protection"

It is always a great pleasure for me to open the annual workshop of the Federal Commission on radiation protection. The theme for this year's session – Switzerland's international relations in Radiation Protection – gives us the opportunity to take stock of Switzerland's position in the international community.

Switzerland is a small country and we are constantly aware that we cannot remain isolated. This is particularly true in regard to the field of radiation protection, especially for the following two reasons: from its outset, radiation protection has developed as a result of cooperation at the international level; after the end of the first world war it became apparent that means of protection were needed at the international level, not only to ensure the sharing of information but also later in order to confront in a coordinated manner radiological menaces stemming from nuclear tests in the atmosphere;

The increase in knowledge, notably by monitoring populations subjected to exposure, mobilised the commitment of specialists of ionising radiation: epidemiologists, biologists, radiation protection engineers, irrespective of their origin; knowledge sharing has ensured rapid advances in the field.

Even more so than for others, the small country that is Switzerland, cannot navigate alone in the field of research and development in radiation protection. Switzerland is dependent on international

cooperation. The recent revision of our radiation protection legislation is a clear example of this. Both in establishing the principles underlying radiation protection as well as in assessing the perceived levels of risks from the different radionuclides, we have had recourse to the recommendations of the International Commission on Radiological Protection and to the Basic Safety Standards developed by the IAEA and the European Commission. Our work has consisted mainly in adapting these provisions to the local situation in Switzerland.

In order to clarify the international relations of Switzerland in radiation protection, the Federal Commission decided to give the floor today to international organisations and to our closest neighbours. What is your experience with these relations and what do you feel about them? We hope that you will be frank and honest in your analyses! Nevertheless, we are counting on your goodwill to show us how we can improve in the future.

Accordingly, today's workshop has the aim of initiating discussions in regard to our relations and for us all to reflect together on the formulation of possible improvements. I want to warmly thank the speakers who are certainly going to fuel our reflexion. I thank you all for your interest and contributions to the discussion and wish you all an interesting and fruitful day.

UNSCEAR- Swiss relation in radiation protection

"Recent UNSCEAR statements on health effects from ionising radiation exposure and inferred risks" (P. Jacob)

Recent UNSCEAR statements on health effects of ionizing radiation and inferred risks

Peter Jacob
Representative of Germany at UNSCEAR
Vice-Chair of UNSCEAR

KSR Radiation Protection Workshop, April 2018, Bern
Switzerland's international relations in radiation protection

1. United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR)

UNSCEAR was established by the General Assembly of the United Nations in 1955

Its mandate to assess and report levels and effects of exposure to ionizing radiation

The General Assembly has designated 27 countries to provide scientists as members of the Committee

KSR Workshop, Apr 2018, Bern | Switzerland's international relations in RP | Peter Jacob

Swiss experts in the German delegation at UNSCEAR

Sébastian Baechler: Official seat in 2016 for
Collection, analysis and dissemination of data on radiation exposures, in particular on medical and occupational exposures

Sébastian Baechler: Official seats in 2017 for
Effects of exposure to radon in homes and workplaces
Developments since the 2013 UNSCEAR report on the levels and effects of radiation exposure due to the nuclear accident following the great east-Japan earthquake and tsunami

Christophe Murith: Official seat in 2018 for
Lung cancer from exposure to radon and to penetrating radiation

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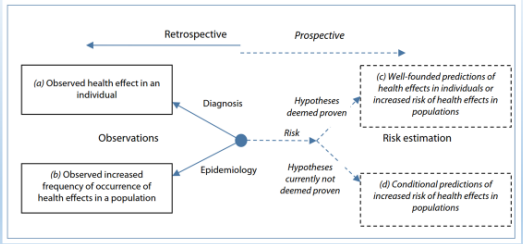
2. Attributing health effects to ionizing radiation exposure and inferring risks
UNSCEAR 2012 Report, Annex A



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3. Uncertainties in risk estimates for radiation-induced cancer
UNSCEAR 2012 Report, Annex B

Uncertainties of effect estimates in epidemiological studies are caused by

i) Statistical uncertainties (related to statistical power)

ii) Uncertainties and errors of exposure or dose estimation
Regression calibration: effective method for dealing with random individual dose errors
Shared dose errors may bias risk estimates or underestimate the uncertainty of these estimates
Multiple-realization dosimetry systems and computationally intensive Bayesian methods
Need to develop practical methods for such analyses

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iii) model uncertainty
multi-model inference
Bayesian model averaging

iv) further factors including
outcome assessment (identification of cases)
study design (loss of follow-up or incompleteness of data)
confounding factors (if not addressed)

Uncertainties of risk estimates are further caused by
transfer of effect in epidemiological study to risk of population of interest:
different exposure conditions, dose distribution, age distribution, baseline rate, lifestyle, genetic predisposition, ...

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Evaluation of lifetime risk for solid cancer among male workers in UK

Scenario: Occupational exposure between ages 30 and 44 with a total dose of 100 mGy

Baseline: 40 cases among 100 workers

Two approaches to estimate radiation risk: Based on LSS, and on NRRW 3

Agreement on a lifetime excess cancer incidence of about 1 case among 100 workers

Uncertainty interval based on BEIR VII model for LSS transfer: 0.3 to 1.6 cases

Whether or not the uncertainty interval is too narrow cannot be answered presently

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Evaluation of lifetime risk for thyroid cancer among Ukrainians

Scenario: Accidental exposure to I-131 at age 10 with a total dose of 200 mGy

Attributable fraction = Excess cases / Total cases

BEIR VII model:
Males: 0.33 (95%CI: 0.08; 0.60); Females: 0.49 (95%CI: 0.15; 0.77)

Whether or not the uncertainty interval is too narrow cannot be answered presently

UNSCEAR 2008 Report, Annex D

Ukraine, Belarus and four Russian oblasts affected by the Chernobyl accident
Average thyroid dose for age under 18
Evacuated: 900 mGy
Non-evacuated: 170 mGy

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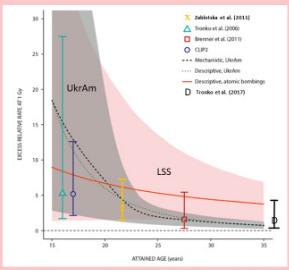
Excursus
Excess relative rate of thyroid cancer

Excess relative rate = excess/baseline

Kaiser et al. Carcinogenesis 2016
Tronko et al. Int J Cancer 2017



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4. Evaluation of data on thyroid cancer in regions affected by the Chernobyl accident
A 2017 White Paper to guide UNSCEAR's future work

Updates number of thyroid cancer cases among those under 18 at the time of the accident

UkrAm and BelAm studies in agreement with Annex B of 2012 Report
Best estimates of AF slightly lower, width of uncertainty interval slightly wider

Attributable fraction decreases with time

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5. Effects of radiation exposure of children
UNSCEAR 2013 Report, Annex B

Stochastic effects

Compared to adults children are:
- more radiosensitive for the group of all solid cancer types, for non-CLL leukaemia, and for thyroid, non-melanoma skin, breast (puberty exposure) and brain cancer
- comparable or less sensitive for lung cancer.

At present, information on lifetime risk for specific cancer types following exposure at young ages is statistically insufficient

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High-dose (deterministic) effects

Compared to adults children are:
- more sensitive for cognitive defects, cataracts, thyroid nodules, breast hypoplasia, and impairment of the muscosceletal system
- comparable sensitive for neuroendocrine abnormalities
- less sensitive for deterministic effects in ovaries (sterility)

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6. Biological effects of selected internal emitters – Uranium
UNSCEAR 2016 Report, Annex D

Radiological and chemical effects depend on chemical form and route of intake

Chemical toxicity: renal effects, short lag-time

Radiological toxicity: tumorigenic effects (soft tissue sarcomas in rats and osteosarcoma in mice), long lag-time

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Epidemiology

Veteran cohorts potentially exposed to DU: no clinically significant pathologies
Limitations: Short period of follow-up, poor determination of exposure

Veterans with retained DU shrapnel: no clinically meaningful adverse effects

Occupational exposures: weak association of lung cancer risk with uranium exposure

Drinking water from private drilled wells:
Small functional alterations in the kidneys of minimal clinical significance

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7. Epidemiological studies of cancer risk
due to low-dose-rate radiation from environmental sources
Adopted at 64th UNSCEAR Meeting in 2017

Techa River Cohort
Dose-dependent increase of leukemia and solid cancer, comparable with LSS
Dose-response for oesophageal and uterine cancer (not observed in other studies)

Karunagappally or Yangjiang HNBR
No discernible increases were reported for solid cancer or leukaemia
Low precision of results does not rule out either absence of an excess or substantially higher effects per unit dose than reported in LSS

Childhood leukaemia and natural environmental background radiation
Varying results
Swiss study (Spycher et al. Environ Health Perspect 2015) ERR at 100 mGy: 4 (95%CI: 0; 8)

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Studies have shortcomings, such as small sample size and methodological weaknesses

Case-control studies within the cohorts or longer follow-up with larger numbers of cases can be expected to improve the precision of the results

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8. Ongoing work

Exposure of patients to ionizing radiation

Exposure of workers to ionizing radiation

Selected evaluations of health effects and risk inference due to radiation exposure

Biological mechanisms influencing health effects from low-dose radiation exposure

Lung cancer from exposure to radon and to penetrating radiation

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9. Scientific priorities of UNSCEAR beyond the current Programme of Work

Sources and exposure

Mechanisms of radiation actions and biological reactions

Health and environmental effects, and inferred risks

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The German delegation at UNSCEAR is looking forward

to a further collaboration with experts from Switzerland

KSR Workshop, Apr 2018, Bern | Switzerland's international relations in RP | Peter Jacob

ICRP- Swiss relation in radiation protection

"ICRP and Highlights of our Programme of Work" (C. Clement)

ICRP and Highlights of our Programme of Work

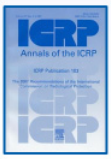
KSR Radiation Protection Workshop
April 13, 2018
Bern, Switzerland

Guiding radiological protection for 90 years
1928 - 2018

Christopher Clement
ICRP Scientific Secretary
sci.sec@icrp.org

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*

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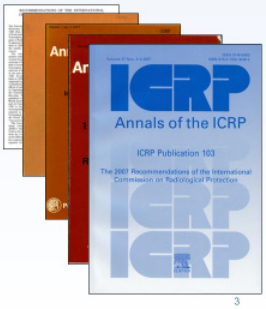
ICRP Fundamental Recommendations

Latest
ICRP *Publication 103*
2007 Recommendations of the International Commission on Radiological Protection

Earlier
1928, 1934, 1937, 1950, 1954, 1958, 1959, 1962, 1965, 1977, 1991



3

Recently Published in the Annals of the ICRP

- *P132* Cosmic Radiation in Aviation
- *P133* Specific Absorbed Fractions
- *P134* Occupational Intakes of Radionuclides: Part 2
- *P135* Diagnostic Reference Levels in Medical Imaging
- *P136* Dose Coefficients for Non-human Biota Environmentally Exposed to Radiation
- *P137* Occupational Intakes of Radionuclides: Part 3
- *P138* Ethical Foundations of the System of Radiological Protection
- *P139* Occupational Radiological Protection in Interventional Procedures

4

Primary Aim

Contribute to an **appropriate level of protection for people and the environment** against the detrimental effects of radiation exposure without unduly limiting the desirable human actions that may be associated with such exposure


5

The System of Radiological Protection developed by ICRP is the **basis of standards, regulations, guidance, programmes, and practice … everywhere**

Protecting patients, workers, the public, and the environment against detrimental effects of radiation exposure **world-wide**

6

Independent, international community of experts in radiological protection

~250 experts in science, policy, and practice from more than 30 countries

8

Structure

9

Membership

256 members from 35 countries

as of 2017 July 21, including liaison organization primary contacts

ICRP Members in Switzerland

François Bochud
Institut de radiophysique
Centre hospitalier universitaire Vaudois

*Member of **ICRP Committee 4** on Application of the Commission's Recommendations*

*Member of **ICRP Task Group 79** on The Use of Effective Dose as a Risk Related Radiological Protection Quantity (under ICRP Committee 2)*

ICRP Members in Switzerland

Marcel Lips
Goesgen Nuclear Power Plant

*Member of **ICRP Task Group 103** on Update of ICRP Publications 109 and 111 (under ICRP Committee 4)*

ICRP Members in Switzerland

Linda Walsh
University of Zurich

*Member of **ICRP Task Group 91** on Radiation Risk Inference at Low-dose and Low-dose Rate Exposure for Radiological Protection Purposes (under ICRP Committee 1)*

Formal Relations

Also in Switzerland

Shengli Niu
*Liaison organisation primary contact for the **International Labour Organisation***

Maria del Rosario Perez
*Liaison organisation primary contact for the **World Health Organisation***

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Schweizerische Eidgenossenschaft
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Swiss Confederation

Eidgenössisches Nuklearsicherheitsinspektorat ENSI
Inspection fédérale de la sécurité nucléaire IFSN
Ispettorato federale della sicurezza nucleare IFSN
Swiss Federal Nuclear Safety Inspectorate ENSI

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PRIORITIES

ICRP INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION 19

2016 – 2020

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INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION

GUIDING RADIOLOGICAL PROTECTION SINCE 1928

STRATEGIC PLAN

SYSTEM OF RP	ENGAGEMENT	AWARENESS
Maintain and continue to improve the system of radiological protection	*Increase engagement with professionals, policy-makers, and the public*	*Promote awareness of radiological protection and broaden access to ICRP recommendations*

ICRP INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION 20

Strategic Achievements

- ✓ Low or no cost publications: first 60 years, ICRP *Publication 103*, and a few others free to access
- ✓ Biennial symposia
- ✓ Liaison organisations
- ✓ Open nominations for membership
- ✓ ICRP Code of Ethics
- ✓ Significant increase in use of social media
- ✓ Recommending areas of research

ICRP INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION 21

ICRP
Annals of the ICRP

FREE STUFF!

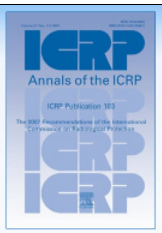
The first 60 years of ICRP publications are now available for free download at www.icrp.org

(the 1928 Recommendations to *Publication 53*)

Selected newer titles are also available for free download

- ✓ *Publication 103* the 2007 Recommendations of 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
- ✓ *Publication 119* Compendium of Dose Coefficients based on ICRP *Publication 60*
- ✓ Various proceedings issues

ICRP INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION 22



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https://tinyurl.com/ICRPFTA

Cornerstone contributions of ~€50k already received from UAE FANR & US DOE towards the goal of **€ 500k in 2018***

30% achieved through organisations and individuals

** Achieving the goal will enable all ICRP publications (except the most recent rolling two years) to be free to download for everyone, everywhere*

Contact: kelsey.cloutier@icrp.org or sci.sec@icrp.org

ICRP INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION 23

ICRP

PROGRAMME OF WORK

ICRP INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION 24

Integrating Protection of People and the Environment

An **integrated** view of all benefits and impacts includes consideration of protection of people and the environment

To achieve this consistently, **the ICRP Committee structure** now includes both in each Committee

Oversight: TG 104 *Integration of Protection of People and of the Environment in the System of Radiological Protection*

ICRP INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION 25

ICRP C1 — Radiation Effects

considers the effects of radiation action from the subcellular to population and ecosystem levels, including the induction of cancer, heritable and other diseases, impairment of tissue/organ function and developmental defects, and assesses implications for protection of people and the environment

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ICRP C1 — Members

Chair Werner Rühm (Germany)
Vice-Chair Andrzej Wojcik (Sweden)
Secretary Jacqueline Garnier-Laplace (France)
Tamara Azizova (Russia)
Ranajit Chakraborty (USA)
Wolfgang Dörr (Austria)
Michael Hauptmann (Netherlands)
Kotaro Ozasa (Japan)
Preetha Rajaraman (India)
Kazuo Sakai (Japan)
Sisko Salomaa (Finland)
Mikhail Sokolnikov (Russia)
Dan Stram (USA)
Quanfu Sun (China)
Richard Wakeford (UK)
Gayle Woloschak (USA)

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ICRP C1 — Programme of Work

TG 64 **Cancer Risk from Alpha Emitters** (Tirmarche)

TG 72 **RBE and Reference Animals and Plants** (Higley)

TG 91 **Radiation Risk Inference at Low-dose and Low-dose Rate Exposure** (Rühm)

TG 99 (w/C4) **Reference Animals and Plants Monographs** (Garnier-Laplace)

TG 102 **Detriment Calculation Methodology** (Ban)

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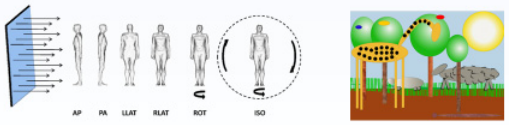
ICRP C2 — Doses from Radiation Exposure

develops dosimetric methodology for the assessment of internal and external radiation exposures, including reference biokinetic and dosimetric models, reference data, and dose coefficients, for use in the protection of people and the environment



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ICRP C2 — Members

Chair John Harrison (UK)
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Secretary Wesley Bolch (UK)
Alexander Ulanowski (Germany)
Volodymyr Berkovskyy (Ukraine)
Eric Blanchardon (France)
Augusto Giussani (Germany)
Derek Jokisch (USA)
Chan Hyeong Kim (Korea)
Rich Leggett (USA)
Junli Li (China)
Maria Antonia Lopez (Spain)
Nina Petoussi-Henss (Germany)
Tatsuhiko Sato (Japan)
Tracy Smith (UK)
Frank Wissmann (Germany)

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ICRP C2 — Programme of Work

TGs 90, 95 & 96 **Dose Coefficients for Workers and the Public** (TG 90 Petoussi-Henss, TG 95 Paquet, TG 96 Bolch)

TG 79 **The Use of Effective Dose** (Harrison)

TG 103 **Mesh-type Reference Computational Phantoms** (Kim)

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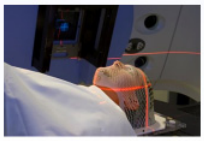
ICRP C3 — Radiological Protection in Medicine

addresses protection of persons and unborn children when ionising radiation is used in medical diagnosis, therapy, and biomedical research, as well as protection in veterinary medicine



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ICRP C3 — Members

Chair Kimberly Applegate (USA)
Vice-Chair Colin Martin (UK)
Secretary Madan Rehani (USA)
Jamila Salem Alsuwaidi (UAE)
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Makoto Hosono (Japan)
Keon Kang (Korea)
Reinhard Loose (Germany)
Josep Martí-Climent (Spain)
Yantao Niu (China)
William Small (USA)
David Sutton (UK)

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ICRP C3 — Programme of Work

TG 36 (w/C2) **Radiopharmaceutical Doses** (Nosske)

TG 89 **Occupational RP in Brachytherapy** (Dauer)

TG 101 **RP in Radiopharmaceutical Therapy** (Yonekura)

Justification in Medical Imaging (Åhlström Riklund)

ICRP C4 — Application of the Recommendations

provides advice on the application of the Commission's recommendations for the protection of people and the environment in an integrated manner for all exposure situations

ICRP C4 — Members

Chair Donald Cool (USA)
Vice-Chair Kathryn Higley (USA)
Secretary Jean-Francois Lecomte (France)
Gillian Hirth (Australia)
Nobuhiko Ban (Japan)
François Bochud (Switzerland)
Michael Boyd (USA)
Analia Canoba (Argentina)
David Copplestone (UK)
Eduardo Gallego (Spain)
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)

ICRP C4 — Programme of Work

- *TG 76* **NORM** (Lecomte)
- *TG 93* **Update on Emergency & Post-Accident Recovery** (Kai)
- *TG 97* **Surface and Near Surface Disposal** (Pather)
- *TG 98* **Contaminated Sites** (Boyd)
- *TG 105* **Considering the Environment** (Copplestone)
- *TG 106* **Mobile High Activity Sources** (Cool)

ICRP

COMING SOON

Upcoming Public Consultation

- Effective Dose as a Risk-related Radiological Protection Quantity
- NORM
- Paediatric Reference Computational Phantoms
- Age-dependent Dose Coefficients for External Exposures to Environmental Sources
- Therapy with Radiopharmaceuticals

IAEA- Swiss relation in radiation protection

"The IAEA project on radioactivity in food and drinking water" *(T. Colgan)*

Radionuclides in Food and Drinking Water

Bern, Switzerland
13 April 2018

Tony Colgan
Head, Radiation Protection Unit

IAEA
International Atomic Energy Agency

Interactions with Switzerland

Christophe, Fabio and Martha

- Hosted regional radon meeting, together with WHO (2010)
- Radon consultant in Bulgaria, Estonia, Iran, Serbia and South Africa
- Development of radon safety guide SSG-32
- Development of radon training material
- Hosted radon group from Montenegro

IAEA

Interactions with Switzerland

Christophe – Emergency Preparedness and Response

- National training courses for first responders (2003-2011)
  Cameroon, Morocco, Niger and Tunisia

Previous RASSC member – Georges Piller

IAEA

What can be done better?

IAEA

Food and Drinking Water

Not just important after a nuclear or radiological emergency……

IAEA

International Basic Safety Standards

Section 5: Existing Exposure Situations

Requirement 51: Exposure due to radionuclides in commodities

The regulatory body or other relevant authority shall establish reference levels for radionuclides in commodities.

5.22. The regulatory body or other relevant authority shall establish specific reference levels for exposure due to radionuclides in commodities such as construction material, food, feed and drinking water, each of which shall typically be expressed as, or based on, an annual effective dose to the representative person generally that does not exceed a value of about 1 mSv.

IAEA

International Basic Safety Standards

Section 5: Existing Exposure Situations

5.23. The regulatory body or other relevant authority shall consider the guideline levels for radionuclides contained in food traded internationally that could contain radioactive substances as a result of a nuclear or radiation emergency, as published by the Joint FAO/WHO Codex Alimentarius Commission [23]. The regulatory body or other relevant authority shall consider the guideline levels for radionuclides contained in drinking water that have been published by the WHO [24].

IAEA

IAEA General Conference Resolution

GC(60)/RES/9 - 2016

Section 6 – Radiation Safety and Environmental Protection

75. Requests the Secretariat to cooperate with relevant international organizations in developing a harmonized framework for the control of radioactivity in food and drinking water

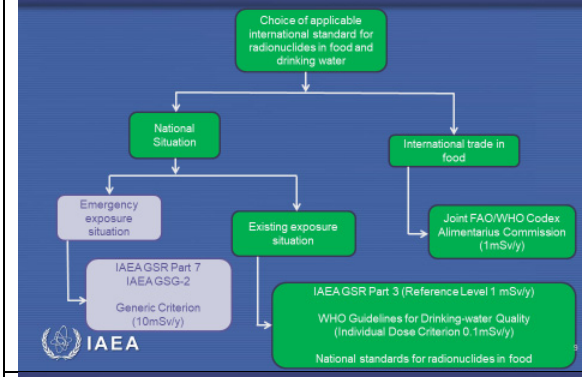
GC(61)/RES/8 – 2017

Section 6 – Radiation Safety and Environmental Protection

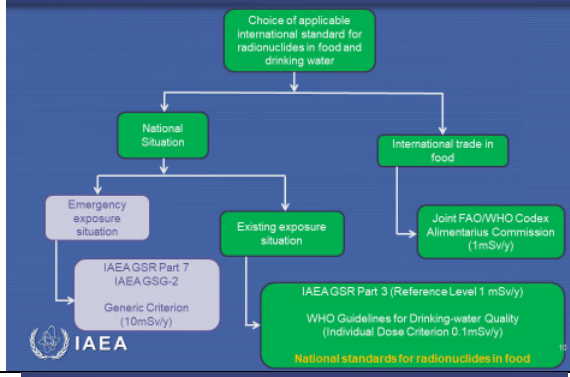
79. Requests the Secretariat to develop principles for harmonized guidance on radionuclide activity concentration values in food and drinking water, in continued cooperation with relevant international organizations and national authorities.

IAEA

International Guidance - Summary



International Guidance - Summary



Comparison of Guidance – Food & DW

	BSS	WHO-DWG	Codex 193-1995
Scope	Non-emergency	Non-emergency	Relevant after an emergency
Dose Criteria	1 mSv/y	0.1 mSv/y	1 mSv/y*
Activity Concentrations	NO	YES	YES
Age Groups	Representative person	Adults	Infants/Non-infants
Radionuclides	Not specified	Mainly natural Also covers man-made	Some man-made
Terminology	Reference level	Guidance level	Guideline level

* assuming 10% of diet is affected

IAEA

Steering Group

Per Strand, Norway (Chair)

Analia Canoba, Argentina
Fei Tuo, China
Karla Petrova, Czech Republic
Dmitrii Kononenko, Russian Federation
John Pule, South Africa
Michael Noska, United States

Secretariat: FAO, IAEA and WHO

IAEA

Starting Point for the Project

Harmonized approach: to what extent can we apply the same approach to food as we apply to drinking water?

- The 1 mSv reference level established in Requirement 51 of the BSS should include the dose contribution from the ingestion of both naturally-occurring and artificially-produced radionuclides jointly, as is the situation for drinking water.
- Consumption rates are similar.
- 'Food' is several different components with very different consumption patterns.
- Wide variability in activity concentrations known to exist for natural radionuclides between and within food groups.
- 'Total diet' collection and analysis is not straightforward.

IAEA

Radionuclides in Food*

Product	Concentration (Bq/kg) x 10^{-3}								
	^{238}U	^{232}Th	^{226}Ra	^{210}Pb	^{210}Po	^{232}Th	^{226}Ra	^{228}Th	^{238}U
Milk products	1	0.5	5	15	15	0.3	5	0.3	0.05
Meat products	2	2	15	80	60	1	10	1	0.05
Grain products	20	10	80	50	60	3	60	3	1
Leafy vegetables	20	20	50	80	100	15	40	15	1
Roots and fruits	3	0.5	30	30	40	0.5	20	0.5	0.1
Fish products	30	10	100	200	2 000	10	ND*	100	ND*
Drinking water	1	0.1	0.5	10	5	0.05	0.5	0.05	0.04

* ND indicates no published data available.

IAEA

* 'representative values' from UNSCEAR 2000

Issues for Consideration

- Do we want qualitative or quantitative guidance?
- With a quantitative approach
  - how are the numbers interpreted and used?
  - what are the implications for international trade?
- Any numbers developed should not be based on extreme cases that would lead to an overly-conservative recommendation.
- Should the same criteria apply to home-produced and imported food?
- Retain flexibility for national authorities to deal with national situations (e.g. wild mushrooms, berries and game)

IAEA

First steps

Identify distribution of doses based on national and regional diets – use GEMS database and UNSCEAR data
Action: IAEA and WHO

Review and compile the available scientific literature published since 2000 on the concentrations of natural radionuclides in foods
Action: IAEA (coordination with FAO, UNSCEAR and WHO)

Source data on natural radionuclides in farmed fish through (1) request for information from participants in the IAEA's network of laboratories (ALMERA); and (2) bilateral contacts with producing countries.
Action: IAEA

IAEA

WHO- Swiss relation in radiation protection

"Radiation protection: the public health perspective" (E. van Deventer)

WHO-Swiss relation in radiation protection

Radiation protection: the public health perspective

Dr Emilie van Deventer
Radiation Programme
Dept of Public Health, Environmental and Social Determinants of Health

Swiss Federal Commission on radiation protection, Bern, 13 April 2018

The World Health Organization

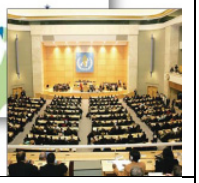
- Established on **7 April 1948**
- **Function**: act as the UN directing and coordinating authority on international health work
- **Objective**: attainment by all peoples of the highest possible level of health

HEALTH
a state of COMPLETE physical, mental and social well-being and not merely the ABSENCE of disease or infirmity"

(Constitution, 1948)

The WHO 3-level structure

7000 people work for WHO in
- 150 WHO offices in countries, territories and areas,
- 6 regional offices,
- at IARC, and
- at the headquarters (Geneva)



WHO's core functions

1. Articulate **ethical** and **evidence-based policy positions**
2. Setting **norms and standards**, and promoting and monitoring their implementation
3. Shaping the **research agenda**, and stimulating the generation, translation and dissemination of valuable knowledge
4. Providing **technical support**, catalysing change and developing sustainable institutional capacity
5. **Monitoring** the health situation and **assessing** health trends
6. Providing **leadership** on matters critical to health and engaging in **partnerships** where joint action is needed

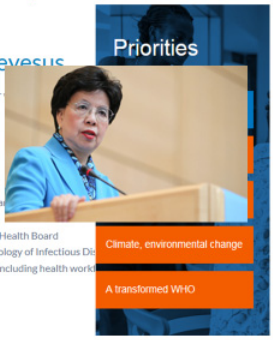
New leadership at WHO (July 2017)

Dr Tedros Adhanom Ghebreyesus

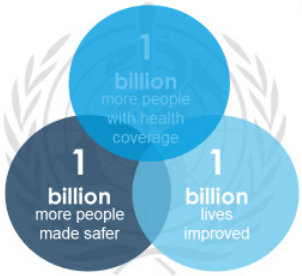
Over three decades, Dr Tedros has been a distinguished leader
world.

Notable roles and other qualifications include:

- Minister of Foreign Affairs, Ethiopia
- Minister of Health, Ethiopia
- Chair, Global Fund to Fights AIDS, Tuberculosis and Mala
- Chair, Roll Back Malaria Partnership Board
- Co-Chair, Partnership for Maternal, Newborn and Child Health Board
- Ph.D. in Community Health, Master of Science in Immunology of Infectious Di
- Globally recognised expert and author on health issues, including health work responses to epidemics, and malaria



The case for change



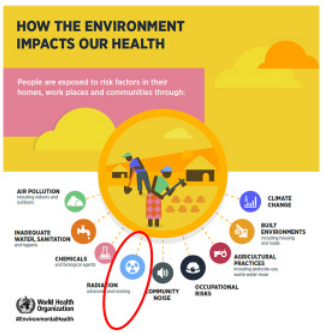
"Our goal is clear - to make WHO a modern organization that works seamlessly to make a measurable difference in people's health at country level."

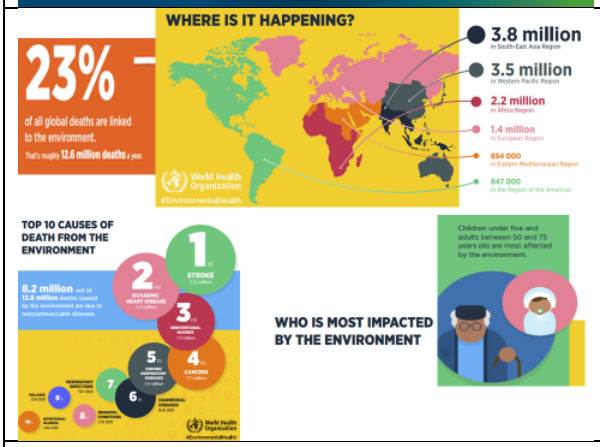
Dr Tedros
Address to the Executive Board, January 2018

Public Health and Environment

World Health Organization

WHO global assessment of the burden of disease from environmental risks





Radiation programme

World Health Organization

NGOs in official relations with WHO
relevant to radiation protection

World Health Organization

- **International Commission on Radiological Protection (ICRP)**
- **International Commission on Non-Ionizing Radiation Protection (ICNIRP)**
- World Federation for Ultrasound in Medicine and Biology (WFUMB)
- International Commission on Occupational Health (ICOH)
- International Organization for Medical Physics (IOMP)
- World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians (WONCA), in short the "World Organization of Family Doctors"

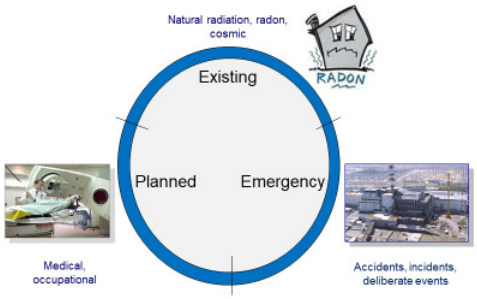
.....

WHO Collaborating Centres

World Health Organization

- A **WHO collaborating centre** (CC) is an institution designated by the Director-General to form part of an international collaborative network carrying out activities in support of the Organization's programme at all levels
- Such designation follows a formal procedure within WHO, with specified terms of reference and annual reporting of joint activities
- The Swiss FOPH has been a CC since March 2014, and has just been redesignated for 4 years

Ionizing Radiation



Existing exposures
Radon

Radon in other WHO documents

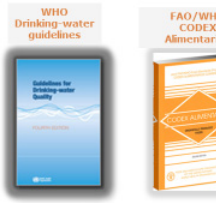
Co-sponsorship of other radon Documents with IAEA

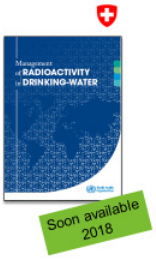
Design and Conduct of Indoor Radon Surveys

Existing exposures
Radon, a contributor to indoor air pollution

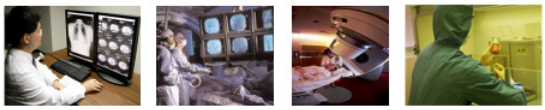
30 October - 1 November 2018

Radioactivity in food and water





WHO Global Initiative on Radiation Safety in Health Care Settings



Diagnostic radiology | Interventional radiology | Radiotherapy | Nuclear Medicine

To promote safe and appropriate use of radiation in health care

Radiation exposure in medicine
The Bonn Call for Action

10 actions to improve radiation protection in medicine in the decade 2012-22

1. Enhancing implementation of **justification** of procedures
2. Enhancing implementation of **optimization** of protection and safety
3. Strengthening **manufacturers'** contribution to radiation safety
4. Strengthening RP **education and training** of health professionals
5. Shaping & promoting a **strategic research agenda** for RP in medicine
6. Improving **data collection** on radiation exposures of patients and workers
7. Improving primary **prevention of incidents and adverse events**
8. Strengthening radiation **safety culture** in health care
9. Fostering an improved radiation **benefit-risk-dialogue**
10. Strengthening the implementation of safety requirements (**BSS**) globally

http://www.who.int/ionizing_radiation/about/med_exposure/en
https://rpop.iaea.org/RPOP/RPoP/Content/News/bonn-call-for-action.htm

Individual Health Assessment of asymptomatic people

Project on justification of **imaging asymptomatic people**

- WHO is developing a **framework** for justification and clinical governance of imaging asymptomatic people for IHA
- WHO is revisiting/updating the generic criteria for cancer screening
- This topic will be presented at the *6th International Conference on Preventing Overdiagnosis* (Copenhagen, Denmark, 20-22 August 2018), co-sponsored by WHO.

Radiation safety culture in health care

- WHO-IOMP-IRPA-IAEA collaboration
- Stakeholders' feedback collected in 5 different regions (during 2015-2017).
  - *Workshops held in Latin America, Europe, Africa, Middle East, and Asia*
  - *Swiss FOPH contributed to the workshop on RSCHC for European countries (Geneva, Dec. 2015)*
- Under development: **Guidance document** on building / enhancing radiation safety culture in health care facilities (by 2019).

Radiation risk communication and benefit-risk dialogue in health care

Dissemination of the WHO document on radiation risk communication

- Session on **radiation risk communication in paediatric imaging** in collaboration with the European Society of Paediatric Radiology (**ESPR**) at the 53rd Annual Meeting of the ESPR (Davos, Switzerland, 1-3 June 2017).
- 500 copies of the WHO document were reprinted with the support of the Swiss FOPH

Risk communication (under development)

Dental imaging: to be developed in collaboration with the FDI/ International Dental Federation and the IAEA

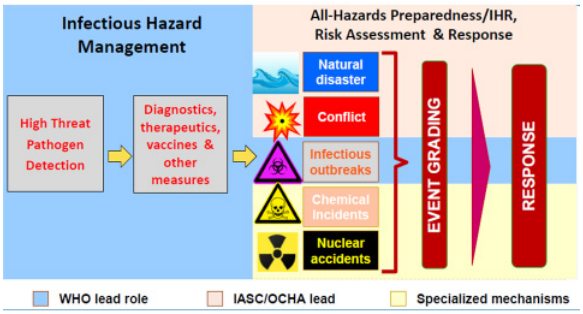
WHO's role in radiation emergency response

International Health Regulations: IHR (2005)

- Provide a legal basis
- Represent a complementary notification to the Emergency Conventions

Mechanisms and tools for assessment, monitoring, and assistance to strengthen preparedness and response capacity of Member States

Emergency preparedness and response
An "all hazards" approach



WHO's Radiation Emergency Networks

WHO REMPAN network (1987)

- **R**adiation **E**mergency **M**edical **P**reparedness and **A**ssistance **N**etwork (**REMPAN**), 40+ centers world wide http://www.who.int/ionizing_radiation/a_e/rempan/en/
- 16 Collaborating Centres, 32 Liaison Institutions, and more than 30 individual experts as observers

WHO BioDoseNet (2007)

- Global network of 60+ biodosimetry laboratories http://www.who.int/ionizing_radiation/a_e/biodosenet/en/

WHO Radiation Emergency Preparedness and Response

Preparedness

- 15th REMPAN meeting in July 2017 that marked 30th anniversary of the network
- WHO guidelines on iodine thyroid blocking (2017)
- FOPH participated in Joint External Evaluation mission to Belgium in 2017

Response

WHO health risk assessment after Fukushima accident (2013)

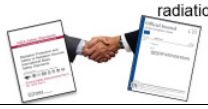
Ionizing Radiation Basic Safety Standards

Radiation Basic Safety Standards

- The **International Radiation Basic Safety Standards (BSS)** are the global benchmark on radiation safety requirements
- BSS cosponsoring organizations are cooperating to foster its implementation worldwide

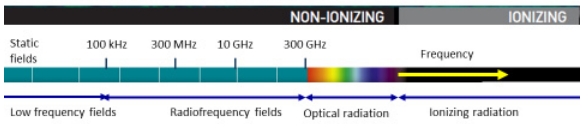
Jointly sponsored by EC, FAO, IAEA, ILO, OECD/NEA, PAHO, UNEP, WHO

- EU countries are transposing/ implementing the **COUNCIL DIRECTIVE 2013/59/EURATOM:** this provides an opportunity for collaboration
- European countries may become "champions" for other parts of the world through their experience in implementing radiation safety standards

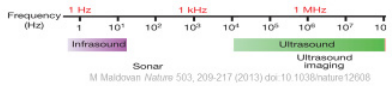


Non-Ionizing radiation

Electromagnetic radiation spectrum



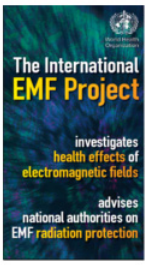
Acoustic spectrum



M Maldovan *Nature* 503, 209-217 (2013) doi:10.1038/nature12608

WHO International EMF Project

- Established in 1996
- Coordinated by WHO HQ
- Membership
  - Open to any WHO Member State government department or representatives of national institutions concerned with radiation protection
  - Over 60 national authorities are currently involved in the Project



Electromagnetic fields
Health risk assessments

The InterSun Project

Mission

- *To reduce the global burden of disease resulting from exposure to UV radiation*

Objectives

- To assess and monitor the health impact of UV exposure
- To provide guidance to national authorities to reduce UV-induced health risks

UV: An environmental risk !!

Health risks and burden of disease

Risk management and communication

Sunbed policies

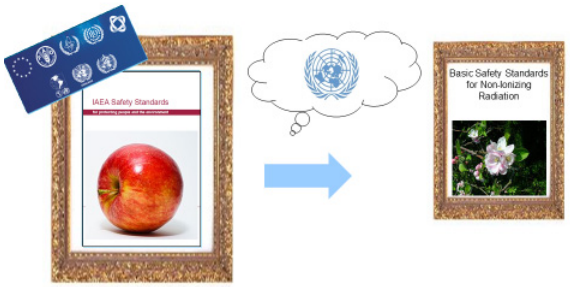
2003

June 2017

Délai référendaire: 5 octobre 2017

Loi fédérale sur la protection contre les dangers liés au rayonnement non ionisant et au son* (LRNIS)

du 16 juin 2017



The Word Health Organization

"Health is a complete state of physical, mental and social well-being, and not merely the absence of disease or infirmity"

WHO's Constitution (1948)

French- Swiss relation in radiation protection

"Research for Radioprotection" (J.-C. Niel IRSN)

IRSN
INSTITUT DE RADIOPROTECTION ET DE SÛRETÉ NUCLÉAIRE
Faire avancer la sûreté nucléaire

Research for Radiation Protection

Jean-Christophe Niel

Director General

April 13, 2018 - Bern

Outline

- IRSN in a nutshell
- Why is research for radioprotection needed?
- What is needed to address RP research challenges?
- European landscape
- Role of research platforms in Europe
- Main achievements of EURATOM integration policy
- Conclusions

Identity

- **A public body** placed under the joint authority of the Ministries of Environment, Defense, Energy, Research, and Health
- National public expert for research and technical support on radiation protection and nuclear safety risks
- 1800 employees, including more than 1000 specialists: researchers, Ph.D. students, post-docs and engineers
- A budget of €300 million
- 8 establishments in France, including 3 major sites: Fontenay-aux-Roses, Cadarache and Le Vésinet

* Annuel report 2017

Fields of Activity

- Nuclear safety: reactors, fuel cycle, waste, medical applications and transports
- Protection of workers, population and environment against ionizing radiation risks
- Emergency preparedness and post-accident operational support
- Training and Education
- Information and interaction with stakeholders and civil society

Three main missions

- Research and services of public interest, including public transparency
- Support and technical assistance to the public authorities for civil or defense-related activities
- Contractual assessment, study and measurement services for public and private organizations, both French and foreign
- National, European and International collaborations in research and expertise

Research for expertise

- 40% of the budget
- Research strategy
  - 9 Guidelines **used to address priority scientific issues**
  - **7 questions to radioprotection**
  - **10 questions to nuclear safety**

- **Scientific governance**
  - **Scientific committee (scientific relevance)**
  - **Visit committee (quality of research)**
  - **Stakeholders committee (answer to societal issues)**

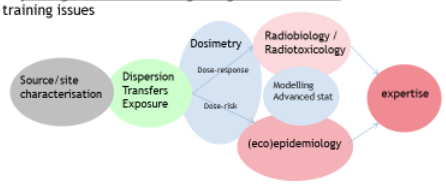
Why is research for radioprotection still needed ?

Although the radioprotection system has shown is efficiency, research for radioprotection is still needed to:

- reduce uncertainties and knowledge gaps (radiobiology, radioecology, dosimetry...)
- educate and train new generations of experts and researchers
- bring answers to societal concerns (for example, low doses issues)
- address remaining complex challenges (multi-stressors exposures, epigenetics issues, medical exposures...)

What is needed to address these goals ?

- Radiation protection research is **multidisciplinary in nature** and has to address complex issues related to a wide range of exposure situations
- Therefore, to address these goals in avoiding dispersion of effort, it requires:
  - An effort in the integration of elementary disciplines, and a high level collaborative approach at the European level
  - A shared scientific strategy at the European level
  - A pooling of resources regarding infrastructures and education & training issues

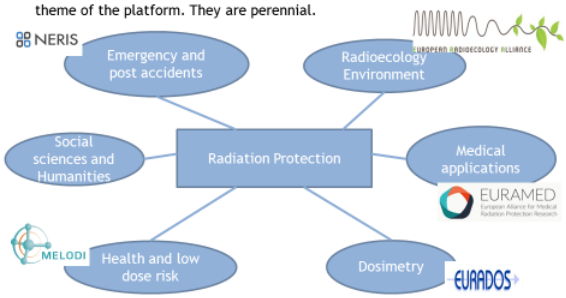


Triggers of research activities for radioprotection

- Research underpinned by strong societal issues aimed at improving the radiation protection of humans and the environment for a variety of exposure situations:
  - Chronic exposure to very low to moderate levels of exposure, representative of the variety of situations of environmental exposure to radioactive substances: life in radio contaminated territories, chronic exposure to multiple stressors of populations over several generations, workers exposure (e.g., NORMs), polluted sites and soils, radioactive waste storage sites
  - Exposure related to increased use of ionizing radiation in medicine: cases of patients exposed to ionizing radiation for diagnostic and / or therapeutic purposes (conventional radiology, interventional radiology, nuclear medicine, external and internal radiotherapy); side effects of radiotherapy
  - Accidental exposure (e.g., irradiated or accidentally contaminated persons)

The European landscape

- At the European level, the research landscape is articulated into thematic research platforms. These platforms are associative-type structures. They are easy to access for all entities whose activities fall within the main theme of the platform. They are perennial.



The role of research platforms in Europe

- The purpose of the research platforms is to integrate national and European activities research for their respective field, to define priority scientific goals and to facilitate effective implementation of research
- They have all produced a Strategic Research Agenda (SRA) that identifies these priority goals and the specific resources, infrastructures and training capabilities needed to further develop research
- They are now recognized as the providers of the reference documents by the European Commission (EURATOM) for elaboration of dedicated calls and selection of the associated Financing Instruments
- Such EC intruments are of different types:
  - **Networks of Excellence (NoE), Collaborative Projects (CP), Coordination Actions (CSA)**
  - **EURATOM H2020 - A European Joint Program (EJP), to which Europe delegates the governance of calls for projects to the selected EJP consortium**

Main achievements of the EURATOM integration policy in the RP field

- Platforms succeeded in gathering scientific communities across disciplines
- Shared and available Strategic Research Agendas at the European level
- Strengthening of the scientific cooperation with the inclusion of academic partners
- Development of policies and action plans for infrastructures and training & education
- A "joint road map" under development that will provide:
  - A link between societal concerns with IR exposure and science
  - A medium term, consensus based, research strategy to credibly achieve the priorities set in SRA's
  - Elements of justification for a medium term funding system for radioprotection research at the European level

R&D challenges selected in the joint road map

A. Understanding radiation related to human health effects
B. Improving the concept of effective dose and other quantities
C. Studying the biological and ecological effects on biota
D. Optimizing radiation protection in medical applications of ionizing radiation
E. Improving radiation protection for workers
F. Integrating and optimizing environmental exposure assessment for ionizing radiation and other stressors
G. Optimizing emergency and recovery preparedness and response
H. Enhancing integration of radiation protection science with society

Conclusions

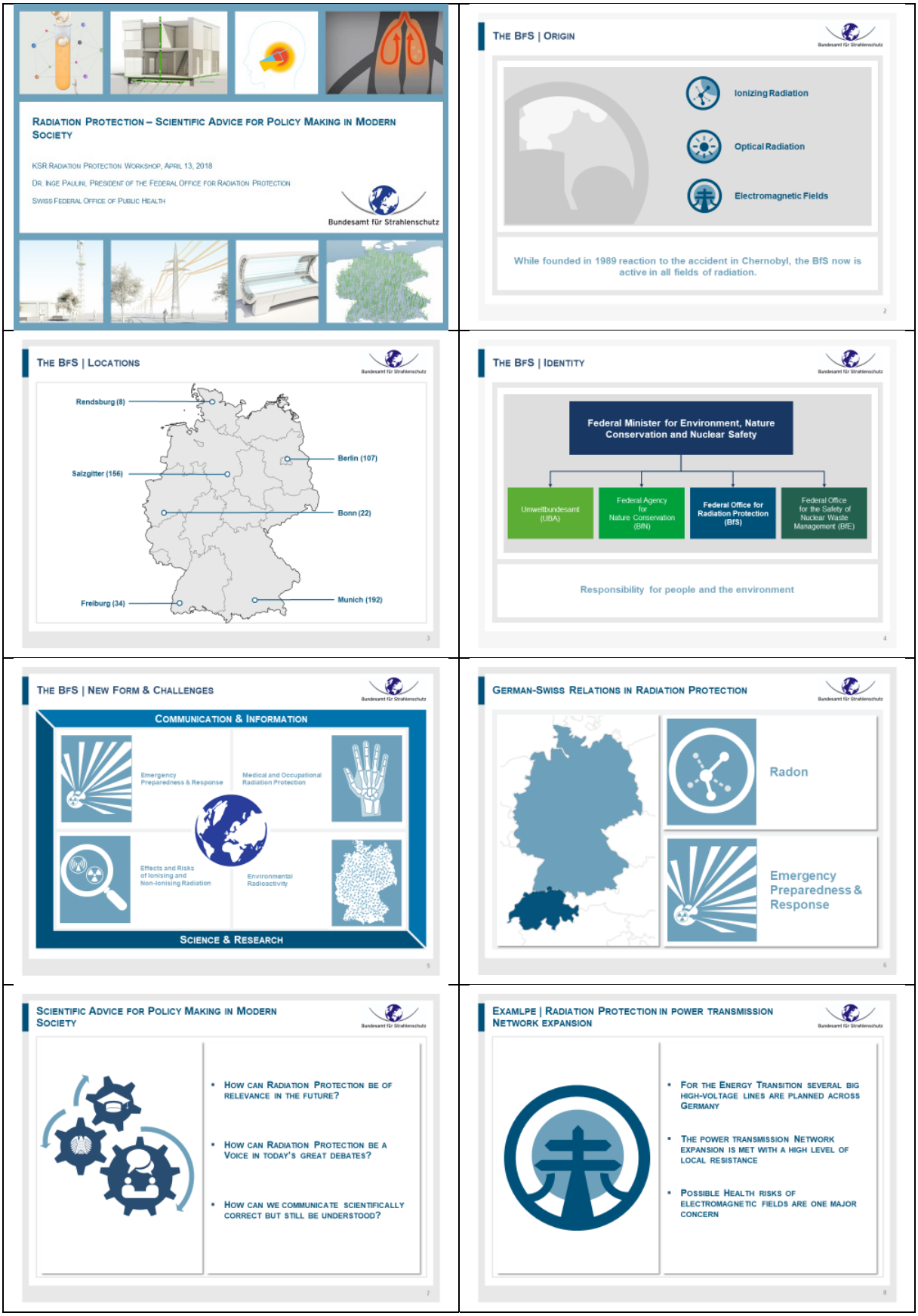
- Although the radioprotection system appears to be robust, research for radioprotection is still needed as complex challenges remain
- To address these challenges, pooling of resources and shared scientific strategy at the European level are needed
- Integration policy pursued in the EURATOM framework has allowed significant progresses in the RP field (platforms establishment, SRAs, policies for infrastructures and E&T)
- A "joint road map" is under development
- If progress have been made in the integration at the European level, progress requires sustained research efforts and policies that will give science maximum chance to solve complex issues in Europe and worldwide

IRSN
INSTITUT
DE RADIOPROTECTION
ET DE SÛRETÉ NUCLÉAIRE

Enhancing nuclear safety

German- Swiss relation in radiation protection

"Radiation Protection - Scientific Advice for Policy Making in Modern Society" (I. Paulini, BfS)



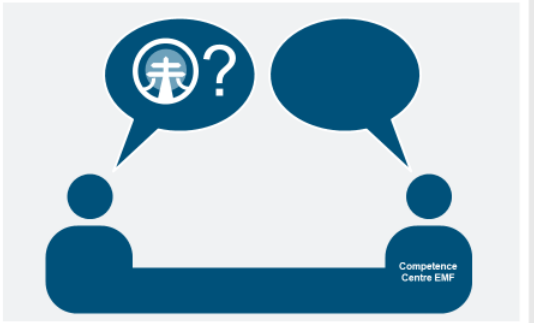
BFS RESEARCH PROGRAMM

Bundesamt für Strahlenschutz

(1) Is there a causation between low-frequency magnetic fields and neurodegenerative diseases?	(5) How can we define perception and effect thresholds?
(2) Is there a causation between low-frequency magnetic fields and Leukemia in children?	(6) What do we know about the occurrence, propagation and absorption of corona ions?
(3) Is there a causation between low-frequency magnetic fields and the risk of miscarriage?	(7) How much do we know of the Exposure of the general public?
(4) Is there a co-carcinogenicity of exposure to magnetic fields?	(8) How are risks perceived and how can we communicate efficiently?

9

BFS COMPETENCE CENTER EMF



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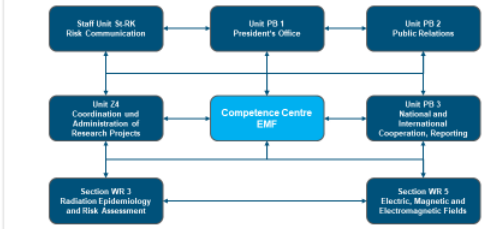
BFS COMPETENCE CENTER EMF



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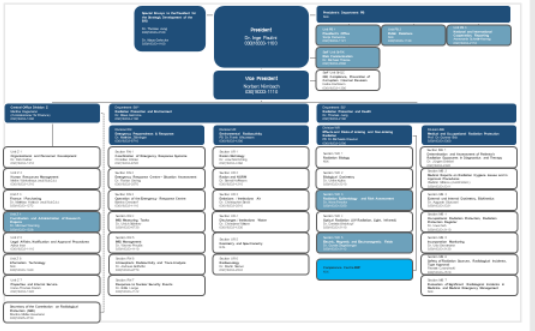
BFS COMPETENCE CENTER EMF



12

HERCA- Swiss relation in medical radiation protection

"Justification in medicine" (S. Ebdon-Jackson PHE , UK)

HERCA

KSR Radiation Protection Workshop

13 April 2018, Bern

Justification in Medicine

Steve Ebdon-Jackson
HERCA WGMA and Public Health England

Heads of the European Radiological protection Competent Authorities - HERCA

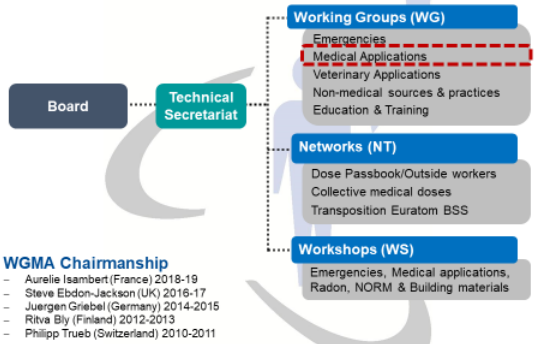
HERCA is a voluntary Association

- HERCA, the Heads of European Radiological protection Competent Authorities, was founded in 2007.
- It is a voluntary association in which the heads of the Radiation Protection Authorities work together in order to identify and discuss common interests in significant regulatory issues.

32 countries (EU MS + IS, NO, CH, RS)
56 organisations (RPA + TSO),
310 nominations
Observers
EC, IAEA, OECD/NEA, WHO, US FDA

2

HERCA is a voluntary Association



WGMA Chairmanship
- Aurelie Isambert (France) 2018-19
- Steve Ebdon-Jackson (UK) 2016-17
- Juergen Griebel (Germany) 2014-2015
- Ritva Bly (Finland) 2012-2013
- Philipp Trueb (Switzerland) 2010-2011

3

Genesis of HERCA WGMA

- born out of Stakeholder Group
- Philipp Trueb (first true Chairman) established stakeholder engagement as a key principle of HERCA activities
- work on CT with manufacturers was instigated in Bonn (February 2010) under his leadership
- CT Manufacturers Stakeholder Involvement (see report November 2017) has been a major achievement of HERCA WGMA and formed the basis for extensive professional body liaison

4

Swiss involvement in HERCA WGMA

- Transposition of Euratom BSSD (HERCA Action Plan 2014)
- Implementation of Euratom BSSD
  - inspections in operating theatres in Switzerland
  - WP clinical audit
  - WP nuclear medicine

5

Activities of HERCA WGMA - Justification

Justification is the first, and for many, the most important radiation protection principle in medicine

HERCA WGMA has considered justification for a range of Euratom Directive requirements …

…… but backwards with regard to ICRP classification, regulatory hierarchy and scale of the issue

6

Activities of HERCA WGMA - Justification

- Individual Justification
  Position Paper on Screening (31 May 2012)
  Position Paper on Individual Medical Exposures for Diagnosis (3 July 2014)
- Generic Justification
  Position Paper on New Types or Classes of Practices in the Medical Field (20 November 2017)

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Screening

Position Paper on Screening (31 May 2012)

- Responded to a need for *clarification* on
  1. screening as part of a programme
  2. *opportunistic screening* or *individual health assessment (IHA)*
- identified *requirements* for individual health assessment
- discussed the *impact* of both on radiation protection authorities in Europe

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Screening

Screening programmes have to be

- evidence based
- meet stringent quality requirements
- approved by the competent national health authorities

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Screening

Individual health assessment

- has limited evidence base, often with little follow-up
- quality assurance requirements are not stipulated
- arises from patient choice

The paper identified lung, virtual colonoscopy, coronary artery calcification and whole body CT as most common IHA but x-ray mammography was also an issue

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Screening

Individual health assessment requires that

- consensus guidelines are deveolped
- a well-established screening algorithm is followed
- risk profiles of participants are clearly defined
- comprehensive information is provided to participants
- comprehensive quality assurance requirements are adhered to
- training and education programmes are in place
- documentation and evaluation measures are initiated

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Screening

Impact on the work of radiation protection authorities includes

For screening programmes

- consideration of CT as part of any programme

For individual health assessment

- clarity regarding regulatory control following transposition of Euratom BSSD
- its role as part of healthcare
- development of referral and justification guidelines

NB this work has formed the basis for a WHO initiative

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Individual Justification

The principle is well-understood but in practice is carried out badly

- 1990 RCR/NRPB paper suggested 20% of diagnostic procedures were clinically unhelpful
- 2000 - subsequent papers and reports suggest figure may range between 5% and 50%
- roles and responsibilities are being challenged by the introduction of clinical decision support (CDS) systems

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Individual Justification

Position Paper on Justification of Individual Medical Exposures in Diagnosis (16 July 2014)

- discussed the general concept
- identified elements of the ***justification process*** and associated responsibilities
- considered aids to the justification process
- identified a role for the regulator

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Individual Justification

The Justification Process includes roles for the undertaking and professionals

- sequential and parallel events may take place from presentation to imaging procedure
- responsibilities should be given to those best placed to carry them out (by knowledge and availability in the healthcare pathway)
- the process should be described and subject to QA, inspection, peer review and audit

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Individual Justification

When considering the Justification Process

- benefit should outweigh the potential detriment
- patient's characteristics should be considered
- responsibilities should be clear and appropriate to the investigation and process
- justification should be carried out prior to the examination and processes should be realistic
- tasks may be delegated, responsibility cannot be

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Individual Justification

To assist the Justification Process

- *referral guidelines* are required, should be used but their availability (and inclusion within CDS systems) should not overrule established responsibilities
- *education and training* will vary but is essential
- *audit* of effectiveness of the justification process can provide valuable information
- *inspection* may focus on compliance rather than enforcement but inspection of the justification process is practical in all Member States

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Individual Justification

Follow-up work

- inspection week - autumn 2016
- paper for International Conference on Radiation Protection in Medicine – December 2017, Vienna

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Generic Justification

Justification of New Types or Classes of Practices in the Medical Field (20 November 2017)

- topic is difficult and neglected in medicine
- provided an introduction to Euratom BSSD requirements and inclusion of the topic in the HERCA Action Plan
- established HERCA's Position
- included a Report of a Multi-stakeholder Workshop (24-26 October 2016, France)

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Generic Justification

For New Types or Classes of Practices in the Medical Field, the paper

- addressed ICRP principles and its 3 levels for justification
- considered the relative importance of these for medical exposures
- discussed requirements of BSSD 2013/59/Euratom
- reflected on the relationship with Medical Devices Regulation

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Generic Justification

To address New Types or Classes of Practices in the Medical Field

- the competent authority may have to undertake proactive and reactive processes
- decisions on justification may be supported by
  - an expert panel
  - stakeholder involvement (case by case basis)
  - existing assessments (eg HTA)
  - CE marking
- processes should be practical and timely – the degree of granularity plays a part and there is no common approach to this across Europe

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Summary

Justification is the first, and for many, the most important radiation protection principle in medicine

HERCA WGMA has addressed justification in a comprehensive manner from the perspective of the regulator

- addressing an emerging category of individual medical exposure (IHA)
- discussing individual justification in terms of process (responsibilities)
- identifying key issues for generic justification

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Summary

HERCA WGMA has used the development of its position papers on justification in practical ways as part of

- multi-stakeholder workshops
- inspector workshops
- an inspection week focusing on justification of exposures
- promotion of common understanding of justification
  - through publications
  - through international meetings

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Thank you for your attention

For further information see www.herca.org

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HERCA- Swiss relation in radiation protection

"New Czech legislation after transposition of EU directive 59/2013 and selected actual problems" (K. Petrova)

HERCA

Latest developments of HERCA

Karla PETROVA
Chair

Heads of the European Radiological protection Competent Authorities - HERCA

Overview

- Overview of HERCA
- Latest achievements
- Some on-going and future activities
- Conclusions

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Background

Despite common European Regulatory Framework, the flexibility in transposing into national regulations has led to differences in radiation protection practices throughout Europe

→ **need for a network/association to exchange on regulatory radiation protection issues**

- Recognition of the need for increased co-operation between Radiation Protection Authorities within Europe.
- Need for a common understanding, mutual approach and harmonization at the practical level.

HERCA established in 2007

Voluntary Association

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Participation

Official nomination by Radiation Protection Authorities (RPAs)

32 countries
(the 28 EU MS + IS, NO, CH, RS)

56 organisations
(RPA + TSO), +330 nominations

Observers
EC, IAEA, WHO, US FDA, OECD/NEA

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Structure & Functionning

Board
Managerial Level

Technical Secretariat

Terms of Reference & HERCA Policies

Chairmanship
Mrs Karla PETROVA, SUJB, CZ, 2018-2020

Working Groups (WG)
- Emergencies
- Medical Applications
- Veterinary Applications
- Research & Industrial Sources & Practices
- Education & Training
- Natural Radiation Sources

Networks (NT)
- Dose Passbook/Outside workers
- Collective medical doses

Task Forces (TF)

Workshops (WS)

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BSS Directive: supporting transposition

- HERCA Action plan defined in Oct. 2014
- **Topics**

Emergency preparedness & response

Non-medical imaging exposures

Radon

RPE-RPO

Medical Exposure

General exchange of Information

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BSS Directive: supporting transposition

- **Acting as a platform:** identify and discuss practical and technical regulatory issues, to exchange on national approaches and to inform about any studies relating to the implementation of the BSS;
- **Exploring a common understanding** of the new requirements and common approaches including guidance when appropriate and feasible;
- **Informing the transposition process** by sharing regulatory experience and being a resource for Competent Authorities;
- **Interacting with EC** to ensure that European RP Authorities voice is heard in the development of any RP policy and guidance in relation to the BSS;
- **Adding significant value** to the transposition and implementation of the BSS by focusing on areas with relevance to trans-boundary processes.

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HERCA Workshops / MSM organised

Topic	Date
MSM on justification	26 Sept. 2014
MSM on CT optimisation	1 April 2015
Joint MSM on CT optimization and justification in medical field	10 March 2016
3rd MSM on CT optimisation	3 March 2017
WS "How to inspect justification and optimisation in diagnostic radiology"	6-8 Oct. 2015
Multi-Stakeholder WS on Generic Justification in medical field	24-26 Oct. 2016
MS WS on reporting of accidental and unintended exposures	26-28 Oct. 2016
WS on implementation of RPE-RPO	6-8 July 2015
1st Workshop on radon: national plans	30 Sept. 2 Oct 2014
2nd Workshop on radon: radon in workplaces	12-14 Oct. 2015
Workshop on NORM and building materials	24-26 May 2016
Workshop on the implementation of HERCA-WENRA Approach with civil protection	14-15 June 2016

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Documents issued since mid-2016

Field	Document
Radon	Common understanding of the BSSD Requirements and Recommendations
NORM & Building materials	WS conclusions and common understanding of BSSD requirements
Veterinary	Guidelines on RP E&T of veterinary professionals
Medical	Position paper on accidental and unintended medical exposures
Medical	Report on CT manufacturers stakeholder involvement
Medical	Justification of new types or classes of practices in the medical field
E&T	Implementation of RPE & RPO Requirements of BSSD

Other internal documents

Medical Applications

- **Inspector competence of authorities:** organisation of a workshop focused on the inspection of justification and optimisation in nuclear medicine. Opened to any HERCA member
- **Awareness in medical exposures**: Actions to be carried out in 2019 on the justification of medical exposures. Priority first given to referrers with the dissemination of key-messages.
- **Medical equipment:** Interactions with COCIR on the standardisation of DAP units and on the information to be provided to undertakings required under Article 78 of the BSSD.
- **Clinical Audits:** to interact with professional organisations to explain differences between clinical audit and inspection.

Emergency Preparedness

Supporting the implementation of HERCA-WENRA Approach:

- **Common situation report**: difficulties for setting the CSR content, new task for analyzing IAEA work and integrating HERCA work.
- **Cross-border coordination of protective actions**: A common understanding of the remaining room for harmonisation without addressing dose levels is being discussed

Monitoring and promoting the implementation of HWA

Increase mutual understanding and knowledge:

- **Country fact sheets**: kept updated, to be released publicly
- Second WS with **relevant interested decision making authorities**

Guidance development: monitoring of people & commodities during nuclear or radiological emergencies, factors affecting the implementation of protective actions

Natural Radiation sources

- First meeting in January 2018, with EC participation
- **Mandate and action plan** to be approved in May 2018
- First orientations give priority to the identification of the consequences of the **new radon dose conversion factors** at a national level and to work towards a common approach to implementing the new dose conversation factors
- **Interactions with stakeholders highly expected**: EC, UNSCEAR, IAEA, WHO, IRPA

Education & Training

- **Country fact sheets** for benchmarking national requirements

Veterinary Application

- Education and Training Requirements: interactions with IAEA for including HERCA outcomes in the "Safety Report on Radiation Protection and Safety in Veterinary Medicine"
- Promoting protection of the veterinary professionals and members of the public during off-site X-ray examinations.
- Project to organize a multi-stakeholder meeting on performing X-ray examinations outside of their own country.

Research & Industrial Sources & Practices

- **Optimisation and justification of research and industrial sources and practices**
- **Industrial radiographie:** exchanging on IR techniques
- **Security of radioactive sources:** exchanging on the assessment security
- **Maintenance of industrial radiography equipment:** inspecting maintenance
- **High-activity source inventory:** comparing practices
- **Ionizing radiation systems for cargo-screening:** comparing practices with potential position paper.

Conclusions

- HERCA is a voluntary association of the Radiation Safety Authorities in Europe working together
- HERCA identifies common significant RP issues and proposes harmonization and/or practical solutions towards a common approach for these issues, whenever possible,
- Successful interactions with majors stakeholders and EC to be maintained
- Along the lines of many activities, HERCA is contributed to the transposition of the EU-BSS directive.
- HERCA activities are now partially focused on BSSD requirements implementation

Conclusions du secrétaire scientifique de la CPR sur les relations internationales de la Suisse en radioprotection

Comme ceci a été montré lors de cet atelier, la collaboration internationale a fait de grosses contributions à la radioprotection en Suisse (par les organismes internationaux : bases scientifiques (UNSCEAR), principes de radioprotection (CIPR), modalités d'application des principes (AIEA) et perspective de santé publique (OMS). On n'a qu'à se baisser pour ramasser les informations et les expertises dans les documents internationaux.

Prenons comme exemple la nouvelle série de la CIPR sur la dosimétrie des travailleurs : il s'agit d'un travail de Titan, allant de la définition des modèles anatomiques en passant par les modèles biocinétiques du tractus respiratoire et alimentaire, par la compilation des données sur les émissions de radionucléides, par le calcul des fractions absorbées à partir de simulation numérique, etc. Un travail gigantesque pour mettre à disposition du praticien de la radioprotection des coefficients de dose internes, bases indispensables pour assurer une protection des travailleurs. Un petit pays comme la Suisse ne serait pas à même de développer un pareil programme ; cependant les facteurs de dose, que nous avons placés dans notre ordonnance de radioprotection, sont notre pain quotidien de radioprotectionniste.

Il s'agit cependant de renvoyer l'ascenseur :

- Participation à la réflexion au niveau international (plus un honneur qu'un engagement)
- Participation à l'animation de la discussion au niveau international (CIPR) et européen (HERCA)
- Participation aux missions de l'AIEA et de l'OMS (formation et expertise)
- Participation à des projets communs de recherche en épidémiologie, radiobiologie et en radioécologie (IRSN et BfS)
- Subventionnement d'actions lancées par les organismes internationaux

Ne pas rester fixé sur nos seuls problèmes. Accepter de consacrer des périodes à la collaboration internationale. Favoriser les échanges. S'engager dans les actions communes. C'est un devoir moral, pour ne pas dire une question d'éthique.

En conclusion j'aimerais remercier tous les conférenciers de ce jour qui ont mis en lumière les relations des organismes internationaux et des pays voisins avec la Suisse dans le domaine de la radioprotection. Je les remercie pour leur générosité à participer au présent atelier et pour leur bienveillance vis-à-vis de nos sollicitations et de nos demandes de support.

Je remercie aussi tous les collaborateurs des offices et des instituts de Suisse en radioprotection pour leur participation. J'espère que le message de l'importance de la collaboration internationale pour la radioprotection en Suisse aura passé et qu'ils sauront aussi à l'avenir honorer la dette contractée vis-à-vis de la communauté internationale.

Enfin merci au Directeur général de l'OFSP pour son soutien à cette participation internationale indispensable au maintien des compétences de sa division radioprotection.

Pour conclure merci également au Président de la Commission ainsi qu'à tous les membres pour m'avoir permis de mettre l'accent sur les relations internationales de la Suisse en radioprotection à l'occasion de mon dernier séminaire en qualité de secrétaire scientifique.

A toutes et tous bon parcours sur les voies nationales et internationales de radioprotection.

Conclusions du président de la CPR sur les relations internationales de la Suisse en radioprotection

En tant que président de la CPR et membre du comité 4 de la CIPR, je suis bien placé pour réaliser à quel point les organisations internationales sont essentielles à la garantie d'une bonne radioprotection.
La question de savoir si la Suisse serait capable de générer seule les réflexions stratégiques et les informations produites par les organisations internationales ne se pose pas. La réponse serait d'ailleurs également négative pour les plus grands que nous ceux qui pourraient penser qu'il est temps de passer "en premier". En effet, les documents produits par les organisations internationales sont le fruit de collaborations très larges où les compétences et les expériences passent bien avant les origines des contributeurs. C'est bien parce qu'elles sont issues de réflexions basées sur la raison et les besoins de la pratique que les propositions de ces organismes sont généralement reprises dans les législations nationales.
Notre pays a la chance d'avoir des experts reconnus dans le domaine de la radioprotection. La meilleure manière de rendre une partie de ce qui nous a été offert est de suivre les pas de notre secrétaire scientifique et de les encourager à collaborer activement avec les organisations internationales.