

**“What if?”
to
“What now?”**

**CRPPH Science and Values in Radiological
Protection Workshops
Helsinki: January 2008
Vaulx-de-Cernay: November/December 2009**

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Science and Values

1st Science and Values Workshop (Helsinki, January 2008)

- What if?
- Case studies to assist in understanding how possible approaches to addressing emerging RP challenges are developed

2nd Science and Values Workshop (Vaulx-de-Cernay, Nov 2009)

- What now?
- Case studies to understand how current RP challenges are being addressed

1ST Science and Values Workshop

Workshop Objectives

- to improve the understanding by concerned parties of the science and the value judgements underlying the radiological protection system;
- to develop a methodological corpus for facilitating the transmission to the next generation of scientists, decision makers, etc.;
- to identify research needs to improve the robustness and quality of the system;
- to improve the transparency of the system to facilitate dialogue between all stakeholders;
- to anticipate and to analyse prospectively potential implications of scientific and social evolution.

Breakout Sessions

- non-targeted effects
- individual sensitivity
- circulatory diseases

Breakout Session Format

- Why are non-targeted effects a relevant topic?
- What do we know now about non-targeted effects?
- What do we not know now about non-targeted effects that we would like to know?
 - What are the scientific issues?
 - What are the regulatory issues?
- What approach(s) should be followed to address scientific issues raised above?
- What would we do differently if we knew now what we would like to know?
- What could or should we do now while we wait for the answers to these questions?

Results

Non-targeted Effects

- It was felt that better understanding of non-targeted effects would very likely not affect the overall level of risk, but rather would better explain the point of origin of the risk.

Individual Sensitivity

- There seemed to be no need to radically modify the current approach RP, however in emergency situations, and in medical diagnostic and therapy situations, it was suggested that some consideration be given to refocusing protective actions taking individual sensitivity into account.

Cardiovascular Disease

- Based on LSS data, there could be a need to lower current dose limits by 30-50% with strong emphasis on optimization. However science is still evolving and there is no need at this point to change.

2nd Science and Values Workshop

Workshop objective:

To develop shared understanding between the various stakeholders, and to identify the elements of a framework more suited to the integration of new scientific and technological developments and socio-political considerations into radiological protection.

In these three areas chosen for the workshop, current approaches to radiological protection have not fully yielded the desired results, or there is a perception that there is insufficient scientific evidence to warrant change in the current approach. Thus it is expected that:

- Stakeholders in each area will present and exchange experience related to their viewpoints and relevant values
- Participants will discuss social and scientific rationale and justification for adopting new approaches (tipping point);
- Practical approaches to improving radiological protection in each area will be discussed based on national experience;
- Participants will identify possible needs for further research; and
- Process and framework elements that could enhance radiological protection in these three areas by better integration of social and scientific aspects will be identified.

Breakout Sessions

- Management of Radon Exposure
- Management of Medical Exposures
- Cardiovascular Disease

Breakout Session Format (1)

Which issues need further elaboration before deciding whether it is necessary or appropriate to change the current approach?

- Identification and discussion of science issues
 - What level of effect is being discussed
 - What are the uncertainties involved and how well characterised are they
- Identification and discussion of practical issues
 - What would a change in regulation impact
 - What would be the magnitude of such changes
- Identification and discussion of value issues
 - Balance of risks and benefits
 - Precautionary Judgement

Breakout Session Format (2)

What aspects weigh on decision regarding possible change?

- Implications for regulation, industry and health care sector
- Practical Implications for application
 - Resources
 - Significant change of approach
 - Education and training implications

Radon

What we think

- Who to Protect
 - Representative Person? Children?
- When to Act?
 - Average Concentration? High Concentration?
 - Is 10 mSv a good benchmark?

Radon

Remaining Questions

- Remediation of radon in dwellings – advice on guidance & methodology – who and how?
- How to establish a legal framework for public exposures

Radon

What we should do

- Promote protective actions, particularly for new buildings
 - Building Codes? Pre-sale Radon Measurements?
- Tie Radon strategy to other programmes
 - Smoking, Energy Efficiency, Indoor-Air Quality
- Integrate RP of radon exposure into the public health system, rather than the other way around.
- Remediation of radon in dwellings is a long-term process
 - Continue to act, but take the time that is necessary to achieve desired results

Medical Exposure Management

What we think

- Evidence that some diagnostic procedures are not justified at the individual level
 - Special concern for children as group
- Evidence that some justified procedures are not optimised
 - Leads to unnecessary exposures and consequential cancer burden
- Justification step seems a crucial focus / How to “quantify” benefit?
 - Mechanisms exist, but are not used by practitioners
- All stakeholders under pressure
 - Medical community
 - Patients
 - Regulators

Medical Exposure Management

Remaining Questions

- How to better engage physicians in RP process?
- How to effectively improve awareness of physicians of RP issues?
- Methods to improve communication with physicians?
- Should physicians be accredited/certified in RP and if so by whom & how often?

Medical Exposure Management

What we should do

- Raise awareness via:
 - Regulatory instruments
 - Guideline development for better implementation
 - Labeling initiatives
 - Information campaigns

Radiation-Induced Vascular Disease

What we think

- Existence of clear epidemiological evidence above 0.5 Gy for the radiation induced cardiovascular diseases (CDs), at lower doses the evidence is inconclusive
 - Mayak study may show evidence at somewhat lower, chronic lifetime exposures
- Radiation induced CDs may have significant impact on the morbidity and mortality
- CDs are currently not specifically addressed by the system

Radiation-induced vascular effects

Remaining Questions

- Is this a clinical health issue that can be differentiated from CD of other aetiology?
- Should RP organisations react to Mayak cohort data?
- How to respond to uncertainties at lower doses?

Radiation-Induced Vascular Disease

What we should do

- reinforce scientific studies
- Increase professional awareness of the issue
- critically review existing data/literature
- This could challenge features of the current RP system in light of evolving science and value judgments