

**International Radiation Protection Association
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IRPA 12

Concluding Plenary Session I

I.1 Characterization of Radiation Exposure

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Subject

Main Fields	Scientific Areas
I Epistemological Basis of Radiation Protection	...→ I.1 Characterization of Radiation Exposure
	...→ I.2 Biological Effects of Radiation Exposure

What is Epistemology ?

- Defined narrowly, epistemology is the study of knowledge and justified belief.

STANFORD ENCYCLOPEDIA OF PHILOSOPHY



Some statistics

	external	internal	bio
Papers accepted	184	79	25
Full papers submitted	123	42	
Keynote lecture	1	1	1
Oral papers	16	10	4

External dosimetry

System evolution

- Type testing
- Documentation

- Calibration
- Performance testing
- Adaption to real fields

Approval

Application

External dosimetry

- Genetic neural networks
- Artificial neural networks
- Uncertainty analysis
- Anisotropy
- 3-D dosimetry

New developments

Monitoring and identification of issues

- QA programmes
- Intercomparisons
- Lessons learned



Techniques

Luminescence

- Thermoluminescence
- Optically stimulated Luminescence
- LiF, Al₂O₃, CaSO₄, Salt, etc.

Scintillation

- LaBr₃, LaCl₃ etc.

Neutron

- Multisphere
- CR-39
- Activation

External dosimetry

Other

- Film
- Gel
- Ion Chambers
- EPR, ESR
- Semiconductor
- DNA

Computational

- Monte Carlo
- Artificial neural networks
- Genetic algorithms

Applications

Environmental

- Indoor
- Outdoor

Occupational

- Medical
- Nuclear
- Uranium mining
- Industry

Medical

- Diagnostic
- Therapy
- Care/ward staff

External dosimetry

Public

- General public
- Patients

Accident/Emergency

- Measurement
- Calculation
- Historical assessments

Key themes

- External dosimetry continues to be a diverse and thriving area of interest
- Key to monitoring and developing ALARA
- Increase in use of computational techniques (basic physics \Rightarrow dose assessments)
- Reliability and validity of assessments

Internal dosimetry

Subjects by number of presentations

- Dosimetry models, applications and uncertainties (15)
- Dose assessment (14)
- *In vivo* monitoring (11)
- Internal dosimetry programs (9)
- Human bioassay data & incident analysis (7)
- Instrumentation and calibration (7)
- Radiochemistry and quality assurance (6)
- Intake source term characterization (5)
- Radionuclide biokinetics (5)

Key themes

- Computational methods
- Voxel phantoms
- Consequent use of statistical methods
- Use of guidelines
- Training events
- Onother step from **art** towards **science**

Biodosimetry

Subjects by number of presentations

- Retrospective dosimetry: 7
- EPR-dosimetry: 5
- Radiation protection in patient diagnostic and treatment: 5
- Various: 8

Key themes

- Method for use from very low dose (< 50 mGy) for acute exposure: Premature chromosome condensation (PCC)
- Method for use for respective dosimetry for acute or chronic exposure: FISH

**AND NOW WE ARE BACK AT
Epistemology!**

**Good luck and
thank you for your attention**

