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## ***EURADOS Strategic Research Agenda Stakeholder involvement***

*Filip Vanhavere*

Antwerp, June 15th, 2018



### **EURADOS: European Radiation Dosimetry Group**

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- Founded in 1981 by scientists involved in contracts with the EC
- Aim: To promote European research, development and cooperation in dosimetry
- Since 2008: self-sustained network with regular income



## EURADOS

- **EURADOS General Assembly**

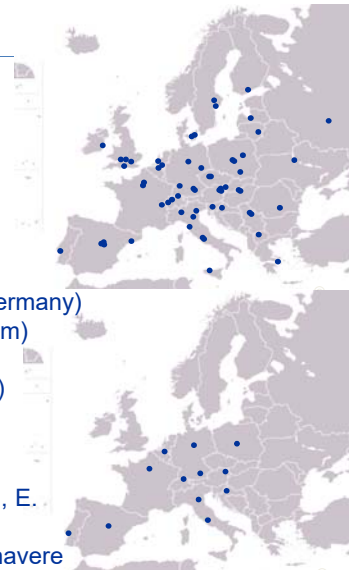
71 Voting Members (institutions)  
represented by designated individuals

- **EURADOS Board of Officers**

Chair: W. Rühm (Helmholtz Munich, Germany)  
Vice-Chair: F. Vanhavere (SCK-CEN, Belgium)  
Secretary: J.F. Bottollier (IRSN, France)  
Treasurer: H. Schumacher (PTB, Germany)

- **EURADOS Council**

J. Alves, J.F. Bottollier, M. Caresano, I. Clairand, E. Fantuzzi, P. Fattibene, M.A. Lopez, P. Olko, W. Rühm, H. Schuhmacher, H. Stadtmann, F. Vanhavere



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## EURADOS

- **Associate Members**

Almost 590 active scientists contributing  
to the overall EURADOS objectives

- **Eight EURADOS Working Groups**

- Harmonization of Individual Monitoring (P. Gilvin, UK)
- Environmental Dosimetry (A. Vargas, Spain)
- Computational Dosimetry (R. Tanner, UK)
- Internal Dosimetry (B. Breustedt, Germany)
- Radiation Dosimetry in Radiotherapy (R. Harrison, UK)
- Retrospective Dosimetry (C. Woda, Germany)
- High-Energy Dosimetry (M. Caresana, Italy)
- Dosimetry in Medical Imaging (Z. Knezevic, Croatia)



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## Activities of EURADOS (European Radiation Dosimetry Group)

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- Activities:
  - coordination of working groups
    - which promote technical development and its implementation in routine work
    - which contribute to harmonization within Europe
  - organization of scientific meetings and training activities
  - organization of intercomparisons and bench mark studies
- Financial resources:
  - from sponsoring institutions
  - from levies raised for activities organized by EURADOS (annual meetings, training courses and intercomparison exercises)
  - from projects funded by the European Commission.



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## Newsletter - EURADOS reports

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- EURADOS website: [www.eurados.org](http://www.eurados.org)
- Free registration to our newsletter: few times per month
- Latest news and announcements, list of publications, ....
- EURADOS reports: free to download
  - > Scientific reports
  - > Results intercomparisons
- More than 100 publications from WG activities in peer reviewed journals



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## EURADOS Strategic Research Agenda

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- Document that describes the research needs linked to dosimetry for the years to come
  - Organised in 5 visions, each with different challenges
- Set-up by EURADOS members and working groups

[EURADOS Report 2014-01](#): W. Rühm et al. "Visions for Radiation Dosimetry over the Next Two Decades – Strategic Research Agenda of the European Radiation Dosimetry Group"

- Will be used to direct research of EURADOS working groups
- Will be used as input for joint roadmap of European research (CONCERT)
- Will be used for priority setting of research calls



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## Vision 1 – Towards Updated Dose Concepts and Quantities

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Absorbed dose does not always provide an adequately detailed description of an irradiation to allow predicting biological consequences

This Vision includes **4 Challenges**

- To improve understanding of spatial correlations of radiation interaction events
- To quantify correlations between track structure and radiation damage
- To improve understanding of biokinetics of internal emitters
- To update operational quantities for external exposure



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## Vision 2 - Towards Improved Radiation Risk Estimates Deduced from Epidemiological Cohorts

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The purpose of radio-epidemiological studies is primarily the deduction of risk coefficients

Effect (y-axis) per dose (x-axis) (slope)

This Vision includes **2 Challenges**

- To explore exposure pathways not yet considered or validated
- To improve retrospective dosimetry for exposure pathways already considered



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## Vision 3 - Towards an Efficient Dose Assessment in Case of Radiological Emergencies

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Radiological emergencies are considered a major challenge of modern societies

This Vision includes **3 Challenges**

- To identify and and characterize new markers of exposure
- To develop strategies and methods to increase measurement capacity
- To quantify doses after accidental internal contamination



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## **Vision 4 - Towards an Integrated Personalized Dosimetry in Medical Applications**

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This Vision includes **5 Challenges**

- To establish out-of-field dosimetry for photon and particle therapy
- To improve dosimetry in modern external beam radiotherapy
- To improve internal microdosimetry in radiotherapy and medical imaging
- To optimize dose and risk estimations in interventional radiology
- Establish reliable patient dosimetry in CT examinations



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## **Vision 5 - Towards an Improved Radiation Protection of Workers and the Public**

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This **Vision** includes **5 Challenges**

- To refine, validate and implement new biokinetic models
- To develop calibration procedures for partial body counters
- To develop accurate and on-line personal dosimetry for workers
- To develop neutron dosimetry techniques further
- To include nuclide-specific information in environmental monitoring



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## Additionally, the SRA includes ...

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### Separate section on the role of computational methods in dosimetry

- Important in all aspects of dosimetry

### Separate Chapter on Training and Education

- Implementation of EC directives and technical recommendations into practice
- Training courses on novel or improved dosimetric methods
- Winter schools, workshops and scientific symposia

### Separate Chapter on Harmonisation and Practice

- Intercomparison for dosimeters used in individual monitoring
- Intercomparison for early-warning systems used in environmental monitoring
- Surveys on practical dosimetry (to document quality of dosimetric practices)
- Intercomparison of dose assessment in cases of internal exposures



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## EURADOS Strategic Research Agenda – History and Current Status

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- **October 2012**  
Council initiates SRA discussion and stimulates input from Working Groups
- **July 2013, Council Meeting**  
Discussion of collected material
- **February 2014, General Assembly**  
SRA presented to Voting Members and input stimulated
- **June 2014:** Publication as EURADOS report
- **2016:** Summary of SRA published in Rad. Prot. Dosim.
- Voting for priorities by Council and Voting members
  - > Used as input for 2 CONCERT Research calls



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## EURADOS Strategic Research Agenda – Future

- **The SRA is not a „fixed“ document: it will need revisions at regular periods**
- Present SRA: input from Council, working Groups, Voting members  
Note, however: many EURADOS members are also involved in other organisations (ICRP, ICRU, medical associations, IEC, ISO ...)"
- Needed: input from stakeholders from outside of EURADOS
- Organisation of EURADOS Stakeholder meeting: 30th June 2016
  - One day meeting (Munich)
  - With CONCERT funding



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## EURADOS Stakeholder meeting

- European Radioecology Alliance (ALLIANCE)
- European Association of Nuclear Medicine (EANM)
- European Federation of Organisations for Medical Physics (EFOMP)
- European Nuclear Installations Safety Standards Initiative (ENISS)
- European Society of Radiology (ESR), European Society for Radiotherapy and Oncology (ESTRO)
- European Association of National Metrology Institutes (EURAMET)
- Heads of the European Radiological Protection Competent Authorities (HERCA)
- International Atomic Energy Agency (IAEA), World Health Organisation (WHO)
- International Commission on Radiological Protection (ICRP)
- International Commission on Radiation Units & Measurements (ICRU)
- International Labor Organization (ILO)
- International Radiation Protection Association (IRPA)
- International Organization for Standardization (ISO)
- International Solid State Dosimetry Organization (ISSDO)
- Multidisciplinary European Low Dose Initiative (MELODI)
- Nuclear Energy Agency (NEA)
- European Platform on Preparedness for Nuclear and Radiological Emergency Response and Recovery (NERIS)
- Nuclear Generation II and II Association (NUGENIA)
- Particle Therapy Co-Operative Group (PTCOG)
- Realizing the European Network of Biodosimetry (RENEB)
- Social Sciences and Humanities (SSH).



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## EURADOS Stakeholder meeting

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- **Presentations of the invited stakeholder organisations**
  - Introduce their organization
  - Why are they interested in the dosimetry of ionizing radiation
  - Address the following questions
    - 1) Which vision or challenge included in the EURADOS SRA needs further improvement?
    - 2) Are there any important topics missing?
    - 3) What are the five most important challenges in the EURADOS SRA (please give rank)?
    - 4) In which field should your organization and EURADOS collaborate in the future?



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## EURADOS Stakeholder meeting

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- **Workshop Program**
  - short introduction given by Chair of EURADOS
  - summary of the EURADOS Strategic Research Agenda
  - overview on the CONCERT project
  - presentations of the invited stakeholder organisations(10 minutes)
  - short summary of the comments received by EURADOS Council
- Format of the Workshop was very efficient and well received.



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## EURADOS Stakeholder meeting

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- Presentations collected
- Notes were taken by EURADOS Council members
- Compiled into one report
- Send for feedback to the stakeholders
- Published as EURADOS report
- [EURADOS Report 2017-02](#): W. Rühm, Ž. Knežević, E. Fantuzzi, R. Harrison, H. Schuhmacher, F. Vanhavere, J. Alves, J.F. Bottollier Depois, P. Fattibene, P. Gilvin, M.A. Lopez, S. Mayer, S. Miljanić, P. Olko, H. Stadtmann, R. Tanner, A. Vargas, C. Woda: "EURADOS Stakeholder Workshop on June 30th, 2016"



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## SRA update

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- 2017-2018: SRA update is on-going
  - which projects have been done, new important publications, evolutions: 1/2 page per challenge, state of the art
  - input from stakeholder report: what is missing in SRA: 1/2 page
  - proposals for simplifying, proposals for different structure: 1/2 page
- Information is collected, new version is under preparation...
- Publish new version 1<sup>st</sup> half 2019

