BIOPROTA
An explanation for the IUR workshop Worldwide Harmonisation of Radioecology Networks

Aix-en-Provence
19 – 20 June 2014

What is BIOPROTA?

An international forum for exchange of information to support resolution of **key issues** in **biosphere aspects** of assessments of the **long-term impact** of contaminant releases associated with **radioactive waste disposal**

Organisation

- Started in 2002 based on initiative of IRSN (Pascal Santucci) and NRPA
- Governed by a Concept and Definition Document, updated each year
- Implementation supported by a Technical Secretariat
- Sponsoring Committee to monitor the TS
- Current chairperson; Danyl Pérez-Sánchez, CIEMAT

Membership 2013/14

- Andra, France
- ARAO, Slovenia
- Areva, Fr
- BfS, Gerr
- CIEMAT,
- EdF, Fran
- ENSI, Sw
- EPRI, US
- FANC, Be
- FMBC, R
- IRSN, Fra
- JGC Corporation, Japan
- KAERI, Korea
- KORAD, Korea
- LLWR, UK
- Negra, Switzerland
- UK
- a
- ium
- Oregon State Univ. USA
- Univ. Life Sciences, Oslo

Operators
Regulators
Technical support organisations
Academic institutions

All supported by their own experts and contractors

Biosphere Assessment Problem

- Assessment period extends thousands of years into future!!!
- Empirical analysis of historic releases, helpful but often for the wrong radionuclides and always not long enough time series, so not a complete solution
- Prognostic assessment with models is difficult:
  - environmental change
  - human behaviour not easily assumed, but affects:
    - modes of exposure, and
    - modifies environmental change

Key Objectives

- Help make available and share the best sources of information to justify modelling assumptions
- Focus on key uncertainties for important radionuclides and processes
- Develop a scientific basis for removing {potentially} unnecessary conservatism

Method of Work

- Annual meetings to share latest progress and raise new key (special) issues
  - 2014 was in London
  - 2015 will be in Madrid
- Topical workshops to review special issues
- Mechanism for developing projects among organisations with shared interest in further focussed research on the special issues

Example Special Workshops

- Evaluation of Primary Features, Events and Processes Occurring in the Geosphere-Biosphere Interface Zone
- C-14 model review and comparison
- Cl-36 in the Biosphere
- Se-79 in the Biosphere
- Environmental behaviour of Radium
- Methodologies for Assessing Radiation Impacts on Non-Human Biota from Radioactive Waste Disposal Facilities
- Scientific Basis for Long-term Radiological and Hazardous Waste Disposal Assessments

Initial Special Projects

- Model Review and Comparison for the Spray Irrigation Pathway
- Modelling the Inhalation Exposure Pathway
- Application of Biotic Analogue Data
- Model Inter-comparison with Focus on Radionuclide Accumulation in Soil

Focus on long-term accumulation effects on dose and emergence from below (weapons fall out deposition data not very relevant)

Focus Shift to Key Radionuclides

- C-14 Long-Term Dose Assessment in Terrestrial Agricultural Ecosystem: FEP Analysis, Scenario Development, and Model Comparison
- Modelling the Behaviour of Se-79 in Soils and Plants
- Investigation of Cl-36 Behaviour in Soils and Uptake into Crops
- Long-term Dose Assessments for U-238 Series Radionuclides

Other Special Projects

- Non-human Biota Dose Assessment: Sensitivity Analysis and Knowledge Quality Assessment
- Demonstrating Compliance with Protection Objectives for Non-Human Biota within Post-closure Safety Cases for Radioactive Waste Repositories
- Human Intruder Dose Assessment for Geological Disposal

On-going Projects

- Modelling Approaches to C-14 in Soil-Plant Systems and Aquatic Environments, and Scope for Validation
- Methodology for addressing transfer across the Geosphere-Biosphere Interface, allowing coherently for environmental change in the geosphere and biosphere
- Temporal and spatial scales for assessment of doses to Non-Human Biota

Overview

- All is done in spirit of collaborative scientific investigation
- Results are presented as potentially helpful information, *not* as recommendations or as a collective opinion
- A substantial body of results has been produced, all available at ***www.bioprota.org***
- It is hoped that BIOPROTA is an effective model for sharing resources to address commonly identified problems