International Union of Radioecology

IUR sponsored Workshop
Stirling University, Scotland - 21-23 June 2018

**Low dose ionising radiation effects on the ecosphere;
Are high dose and dose rate data good (enough) predictors?**

Preliminary list of Workshop Questions and issues for discussion

Organisers:

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This workshop follows from others organised by the International Union of Radioecologists (IUR) which aim to bring radiobiologists and radioecologists together to discuss issues of interest to both groups concerning effects on humans and non-humans of exposure to low doses of radiation. The particular emphasis of this workshop to be held in Stirling Scotland from 21st-23rd June is the question of the shape of the low dose response relationship and to what extent can low dose and chronic exposure effects be predicted from high dose high dose rate exposures.

To address these issues we have identified 12 questions for discussion – other suggestions are welcome!

The successful approach used in Essen will be followed – i.e. two discussion leaders will be assigned to each question and at the end of the workshop a position paper will be drafted with all participants as authors.

The workshop will be followed by a meeting of the Low Level Radiation and Health Group starting with dinner on Saturday June 23rd and continuing on Sunday June 24th.

Questions

1. Can we extrapolate endpoints and risk from high to low dose/dose rate or are there different mechanisms involved?

2. If there are different mechanisms, can we identify breakpoints where mechanisms shift and what the consequences are?

3. Do any other mechanisms impact on the spectrum of susceptible species in an ecosystem such as system level emergent mechanisms?

4. How do we deal with dose rate, route of exposure and duration?

5. How relevant are adaptive responses and adaptation in populations?

6. Evidence suggests that in the field, organisms are more negatively impacted by radiation than in the lab; how do we factor this into risk modelling?

7. Can we identify robust field-based bioassays of effect which could inform Q4?

8. What lessons can we learn from Chernobyl and Fukushima regarding extrapolations?

9. Can we identify integrated mechanistic approaches which could guide understanding of radiation effects at low doses e.g. Can we move from DNA/mutation dominated ideas in radiation protection to include involvement of other processes?

10. How can we include concepts of ecosystem resilience, rescue effects and warning/signalling?

11. What are the key knowledge gaps in developing an integrated approach to low dose risk assessment and management?

12. Can we identify population and ecosystem level biomarkers or must a "biomarker" always be measured in an individual?

13. How relevant are chemical and pathological stressors in modulating radiation effects?