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International Wildlife Dosimetry Workshop

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RE	Restricted to a group specified by the partners of the [STAR] project	
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Executive Summary

This report summarises the main issues related with the International Wildlife Dosimetry Workshop, organized by STAR in June 2014.

All the information of the workshop: the agenda, the presentations of all the speakers and the minutes of the discussion sessions can be freely downloaded from the STAR web page: <https://wiki.ceh.ac.uk/display/star/Wildlife+Dosimetry+Workshop>.

The workshop addressed a wide spectrum of questions related to the ionising radiation dose estimation in animals and plants, involving world leading experts in each of the subjects treated. There were 30 participants from 12 countries (Belgium, Canada, USA, Spain, France, Germany, Japan, Norway, Portugal, United Kingdom, Russia and Sweden).

The STAR International Wildlife Dosimetry Workshop

Despite there being no conceptual difference between the dosimetric systems for humans and wildlife, dose calculations for wildlife are currently in a simplistic, developmental stage relative to the advanced state of human dosimetry. Accurate quantification of absorbed dose is the greatest challenge in field research of free-ranging animals, and it is the measurement most lacking in many of the controversial papers regarding radiation effects to wildlife at Chernobyl and Fukushima. Although pragmatic, current wildlife dose models are based on mean contaminant density, and do not account for the spatial and temporal heterogeneity in wildlife exposures. Additionally, the models do not estimate the dose to tissues of significance for plants or animals. Recent progression in human dosimetry towards voxel phantoms provides a clear indication of how to improve wildlife dosimetry. Advances in modeling the movements of animals through contaminated environments are being made in ecology and ecotoxicology, and should be considered in radioecology.

The dosimetry of wildlife is considered within STAR WP3. In particular Task 3.3 had the aim to characterise the state of the art regarding the use of radiation transport codes for the dosimetry of wildlife. To do so, a critical review of radiation transport codes and their application to wildlife dosimetry has been performed (*E.L. Hansen, K. Beaugelin-Seiller, A. Liland, and J. E. Brown. STAR Milestone 3.9 - Report on Methods for Wildlife Dosimetry, 2014*). In addition, an international workshop on wildlife dosimetry was organised on 10-12 June 2014 at CIEMAT (Madrid, Spain). The aim was to analyse the current developments in the area of wildlife dosimetry in order to characterise the improvements that could be done in the future in this relevant field. The workshop was an integration activity and a forum for exchange of knowledge between the European radioecological community and researchers outside of Europe.

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The information of the International Wildlife Dosimetry Workshop (agenda, presentations, minutes of the discussion sessions) can be freely downloaded in the STAR web page <https://wiki.ceh.ac.uk/display/star/Wildlife+Dosimetry+Workshop>.

The topics presented and discussed during the Workshops were:

- Current developments in dosimetry for non-human biota (A. Ulanovsky, Germany)
- Heterogeneous distribution of radionuclides and external dosimetry (K. Beaugelin-Seiller, France)
- External radiation doses to biota Monte Carlo dose model calculations with TADPOLE (K. Stark, Sweden)
- Heterogeneous distribution of radionuclides and internal dosimetry (JM. Gomez-Roz, Spain)
- Noble gas dosimetry for non-human biota (J. Vives i Battle, Belgium)
- Hot Particle Dosimetry Does it really matter? (C. McGuire, UK)

- Voxel Phantoms for Biota: Challenges and Controversies (K. Higley, USA)
- Voxel phantoms for wildlife dosimetry for frog and mouse (S. Kinase, Japan)
- Plant dosimetry terrestrial ecosystems: current approaches and needs for the further development (V. Yoschenko, Ukraine)
- Is microdosimetry important when evaluating dose to wildlife from chronic, low level exposures? (L. Braby, USA)
- Characterization of radiation quality based on nanodosimetry (H. Rabus, Germany)
- EPR-dosimetry for fish (E. Shishkina, Russia)
- Uncertainties in field dosimetry for non-human biota (J. Vives i Batlle, Belgium)
- Dosimetry tools for field studies (T. Hinton, France)
- Using a landscape perspective to refine exposure scenarios (L. Kapustka, Canada)
- Landscape perspective - supplement (L. Kapustka, Canada)
- Multidisciplinary advances in field dosimetry (M. Wood, UK)
- Lessons learned in EURADOS useful for the dosimetry of wildlife (R. Tanner, UK)

During the organization of the Workshop, a priority was to have as much time as possible for open discussions, taking advantage that most of the experts in the field of wildlife dosimetry met in this event. Thus, four discussion sessions were included in the programme:

1. Internal dosimetry and biokinetics in wildlife. Chaired by José M. Gómez-Ros (CIEMAT, Spain) and Jordi Vives i Batlle (SCK•CEN, Belgium)
2. Wildlife dosimetry fit for purpose. Chaired by Justin Brown (NRPA, Norway) and Elisabeth Hansen (CERAD/NRPA, Norway)
3. Uncertainties in wildlife dosimetry. Chaired by Tom Hinton (IRSN, France) and Karolina Stark (SU, Sweden)
4. What improvements are needed in wildlife dosimetry and why? Chaired by Karine Beaugelin-Seiller (IRSN, France) and Nick Beresford (CEH-NERC, UK).

The minutes and conclusions of these discussion sessions are available in the STAR webpage <https://wiki.ceh.ac.uk/display/star/Wildlife+Dosimetry+Workshop>.