Intention for launching Radioecology research working group *(02 February 2015)*

Title and acronym: **Human Food Chain**

Leadership
Nick Beresford (NERC-CEH, UK)

Topical area (ca. 10-line description)
The Working Group activities are aimed to lead to the improvement of radioecological models used in DSS in Europe, including the inclusion of agricultural practice/production and dietary habit data for different regions. This should lead to improved recommendations of remedial actions and their consequences. In part some of the activities of the WG were initiated, but largely not carried forward, in earlier EC projects (e.g. SAVE, STRATEGY). The WG will learn from the Fukushima and Chernobyl accidents.

The focus of the working group over the first 5 years will be the consideration of post-accidental situations in both the short and longer-term, though were relevant radionuclides associated with, for instance, waste disposal will also be considered. The WG will consider all terrestrial (focussing on agricultural) and freshwater foodstuffs. The WG will not consider NORM radionuclides nor food products from forest or marine ecosystems as these areas all have dedicated WGs.

Broad Objectives (up to 5 lines)
1. Improve radiological parameters: This includes those activities aimed to reduce parameter uncertainty, such as acquiring improved data, analysing existing data in a novel way (for example an improved categorization of soils/plants in databases).
2. Incorporate the "human-environment" into models: this includes the "region-specific" parameterisation of, e.g., agricultural or dietary practices.
3. Optimise model complexity: what is the added value from the development of new, processed based, models?

Within COMET WP3, the IRA to be conducted on human food chain modelling has objectives to improve human food chain modelling through: regional customisation of parameter values; use of Bayesian methods and studying the long-term dynamics of soil-to-plant transfer of long-lived radionuclides in different soil types. This roadmap incorporates and builds upon those activities already initiated within COMET.

Justification based on answers to the criteria for prioritization of research, question(s) to be addressed (up to 20 lines)

The outputs of the Working Group should contribute to:

- Having the models and supporting parameter values and datasets to be able to accurately predict the first year dose to humans for different regions in Europe.
- Improve the long-term predictions of radionuclide behaviour in terrestrial (agricultural) and freshwater ecosystems.
- Improve the long-term predictions of the effects of remedial measures.
- More efficient soil - plant based remediation measures for different regions (through a greater understanding of the processes controlling plant uptake).

- Improve our understanding of interception on agricultural plants.

Related challenge(s) and research line(s) in the Radioecology SRA

This topic will help us address Challenge 1 of the Radioecology Alliance's SRA, which is to predict human and wildlife exposure in a robust way by quantifying key processes that influence radionuclide transfer and exposure. Relevant research lines are: *RL1 (Identify and mathematically represent key processes that make significant contributions to the environmental transfers of radionuclides and resultant exposures of humans and wildlife), RL2 (Acquire the data necessary for parameterisation of the key processes controlling the transfer of radionuclides)* and *RL3* (*Develop transfer and exposure models that incorporate physical, chemical and biological interactions, and enable predictions to be made spatially and temporally)*.

In the NERIS SRA, the research 'Area 2' (New challenges for better dose assessments and decision support based on improved knowledge: source term, scenarios, etc.) deals with improvement of existing Decision Support Systems (DSS). The systems include several environmental models such as dispersion and dose assessment.

Where possible, to maximise our resources, we will align our activities with those of the IAEAs MODARIA follow-on programme.