

Concerted Action for an Integrated (biology-dosimetry-epidemiology) Research project on Occupational Uranium Exposure

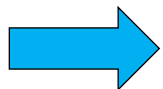
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**Fifth International MELODI Workshop
Brussels, 7-10 October 2013**

Health effects of uranium contamination: state of the art

- Recognised toxicity at high concentration (kidney disease)
- Poor knowledge of chronic low level exposures
 - Limitations of epidemiological studies (insufficient power, poor quality of exposure ascertainment, no consideration of the physical-chemical form of uranium and of its isotopic composition, little control of cofactors)
 - Limited available experimental data in animal models (no published data on cardiovascular system and immune system, insufficient knowledge about the mechanisms of action of uranium at cellular and tissular levels)
- Suggested association with risk of cancer of the lung and lymphatic/ haematopoietic tissues and from cardiovascular diseases (nuclear workers). Impact on the kidney, neurocognitive and immune functions (animal models)
- Issue for public health and for occupational health



Interest of a **collaborative multidisciplinary research project** in Europe

CURE Project «Concerted Uranium Research in Europe»

Concerted Action for an Integrated (biology-dosimetry-epidemiology) Research project on Occupational Uranium Exposure

Aim

To elaborate a collaborative research project, integrating epidemiology, biology/toxicology and dosimetry to improve risk estimation of uranium contamination

- Verification of the **feasibility of a molecular epidemiology** approach
- Preparation of a **common research protocol**

Project characteristics

- Part of the DoReMi European NoE (task5.8)
- Duration: 18 months – 1 July 2013 → 31 Dec 2014
- 9 Participants (IRSN, BfS, PHE, Nuvia, AWE, SCK•CEN, SURO, CREAL, Institut Curie)
- 6 Countries (France, UK, Germany, Belgium, Czech Republic, Spain)

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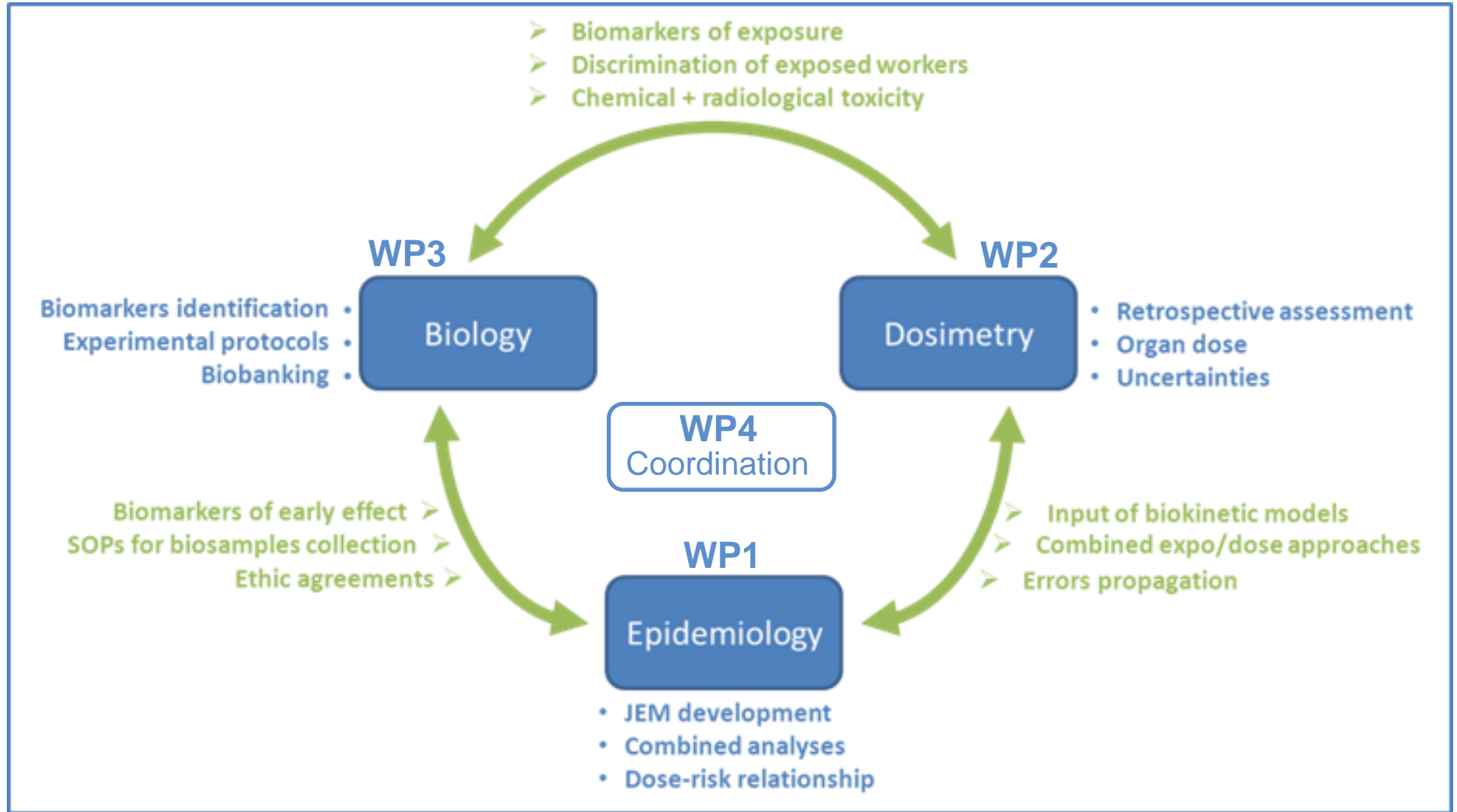
WP1 (epidemiology) verify the compatibility of cohorts of uranium processing workers in France, Belgium and the UK (more than 40 000 workers) and of Czech, German and French miners (more than 70 000 miners), combine these cohorts, review the quality and completeness of data, investigate the feasibility to quantify uncertainties in the exposure data, evaluate the benefits of job exposure matrices and obtain agreements from ethics committees and from workers representatives

WP2 (dosimetry) evaluate the quality and availability of individual monitoring data, define the relevant biokinetic and dosimetric endpoints, harmonize the choice of dosimetric models, the treatment of exposure data and the selection of realistic hypotheses on the conditions of exposure, establish dosimetric protocols and develop methods to propagate uncertainty in the dose estimates

WP3 (Biology) test the feasibility of setting up a common strategy and specific standardized operating procedures (SOPs) to collect biological samples, decide what kind of biological specimens should be collected, identify a list of biomarkers and bioassays useful for evaluating uranium exposure or detecting early effects, assess the feasibility of collecting pertinent samples (blood, urine, faeces and saliva), develop specific protocols for sample collection, transportation, isolation and storage in order to create biobanks and assess the ethical aspects for collecting biosamples and sharing it between countries

CURE Project «Concerted Uranium Research in Europe»

- Biomarkers of exposure
- Discrimination of exposed workers
- Chemical + radiological toxicity



CURE Project «Concerted Uranium Research in Europe»

Kick-off meeting

- 11-13 Sept 2013
- IRSN, Fontenay aux Roses
- 40 researchers
- Invited experts



Perspectives

- Dec 2014: Protocol of a Integrated (biology-dosimetry-epidemiology) Research project on Occupational Uranium Exposure
- Basis for the launching of a large scale collaborative project in Europe to improve the quantification of risks associated to internal contamination.