2020-12-01

*Developing EMN for radiation protecti*on and 19NET03 supportBSS-Consortium represented for the purpose of this letter by the coordinator

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and

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Call Scope Green Deal/Research Potential related to Green Deal

Dear Dagmar,

we are the developing EMN for radiation protection. Our scope is defined by the Euratom Treaty and the Council Directive 2013/59/Euratom, which sets out basic safety standards for protection against the dangers arising from exposure to ionising radiation for workers, the public, and the environment. Compliance with the corresponding legislation has become more complex due to stricter legal dose assessments, exposure limits and activity concentrations as well as new technological developments and emerging complex practices. Our European Metrology Network (EMN) will serve as a single point of contact to cover all the metrological needs related to radiation protection and will relate to all environmental processes in which ionising radiation and radionuclides are involved.

We would like to point out that we consider it our key priority to have the ionising radiation implemented as a topic under the Horizon Europe Calls to serve our Stakeholders.

We consulted our Stakeholders directly from the consortium of the JRP supportBSS via email, phone and informed them during the discussion of the gap workshop of radiation protection metrology on 11th September 2020. This workshop was attended by more than 100 experts in radiation protection, mainly in Europe. Further discussion was sought by the CCRI webinar on radiation protection on 5th November 2020 with an attendance of more than 150 experts worldwide. The TC-IR working group “Ionising Radiation and Radionuclides in Environment, Energy and Industry” was consulted in parallel. **Based on these consultations we can summarise our Stakeholder key priorities / areas of interest as:**

1. Increasing the EU’s Climate ambition for 2030 and 2050:
   Radionuclide techniques and decay data for present and retrospective monitoring of climate relevant parameters.
   Improved data bases for the interaction of ionizing radiation with atmospheric gases and pollutants

2. Supplying clean, affordable and secure energy:
   Environmental radiation monitoring related to nuclear installations, decommissioning, secure waste management and homeland security, traceable to primary standards

3. Mobilizing industry for a clean and circular economy:
   Reuse and recycling of radioactive materials from nuclear, industrial and medical applications

4. Building and renovating in an energy and resource efficient way:
   Control of building materials and standardized measures in building and renovation to reduce indoor radon

5. From 'Farm to Fork': a fair, healthy and environmentally friendly food system:
   Nuclear methods for the control and safeguarding of food chains

6. Preserving and restoring ecosystems and biodiversity**:**
   Radionuclides and cosmic rays as sensors for the ecosystem and their circular processes

7. A zero-pollution ambition for a toxic-free environment:
   Monitoring radioactive pollutants in the environment (air, water and soil)

This aligns with the scope of the EU's Green Deal/RPT for call 2021 and therefore we encourage PRTs to address metrology needs in the following areas:

1. Increasing the EU's Climate ambition for 2030 and 2050:
   Development and validation of novel methods for using radionuclides as tracers for climate relevant processes and isotope ratios for the determination of climatic parameters at present and in the past

2. Supplying clean, affordable and secure energy:
   Harmonisation and traceability of the monitoring of radioactive pollutants in the environment (air, water and soil) arising from nuclear installations, decommissioning and nuclear waste management

3. Mobilizing industry for a clean and circular economy:
   Development of methodologies for the reuse and recycling of radioactive materials from nuclear, industrial and medical applications

4. Building and renovating in an energy and resource efficient way:
   New approaches for the surveillance of building materials concerning radon emanation

5. From 'Farm to Fork': a fair, healthy and environmentally friendly food system:
   Harmonisation of nuclear methods for the monitoring of crop and food chains, including the implementation of the European Drinking Water Directive

6. Preserving and restoring ecosystems and biodiversity**:**
   Standardised methods for the use of radionuclides and cosmic rays (and their secondary radiation in the atmosphere) as sensors for variations of crucial parameters of the ecosystem (e.g. soil humidity, influence of cosmic radiation on the ozone layer with severe impact on ecosystem and biodiversity). Providing reliable data bases for radiation interaction with atmospheric constituents like greenhouse and other atmospheric relevant gases, aerosols and pollutants

7. A zero-pollution ambition for a toxic-free environment:
   Traceability of radionuclide concentration measurements in the environment (air, water, soil

Annette Röttger and Stefan Neumaier