

M18 Stakeholder Meeting

21GRD09 MetroPOEM

Metrology for the harmonisation of measurements of environmental pollutants in Europe

Dirk Arnold
PTB

Welcome and Introductions

➤ Stakeholders invited for the M18 Meeting:

- ✓ Laboratories measuring environmental pollutants
- ✓ International and national regulators responsible for environmental pollution monitoring networks
- ✓ Manufactures of mass spectrometry systems
- ✓ Users of non-SI-traceable isotope reference materials

Welcome and Introductions

➤ Aim of the M18 stakeholder Meeting:

- ✓ To inform the stakeholder community about the work in progress and the planned work in the project
- ✓ To receive feedback from the stakeholder community about their needs
- ✓ To continue the two-way information flow between the stakeholders and the project participants

Stakeholder Meeting Schedule, 29 June 2023

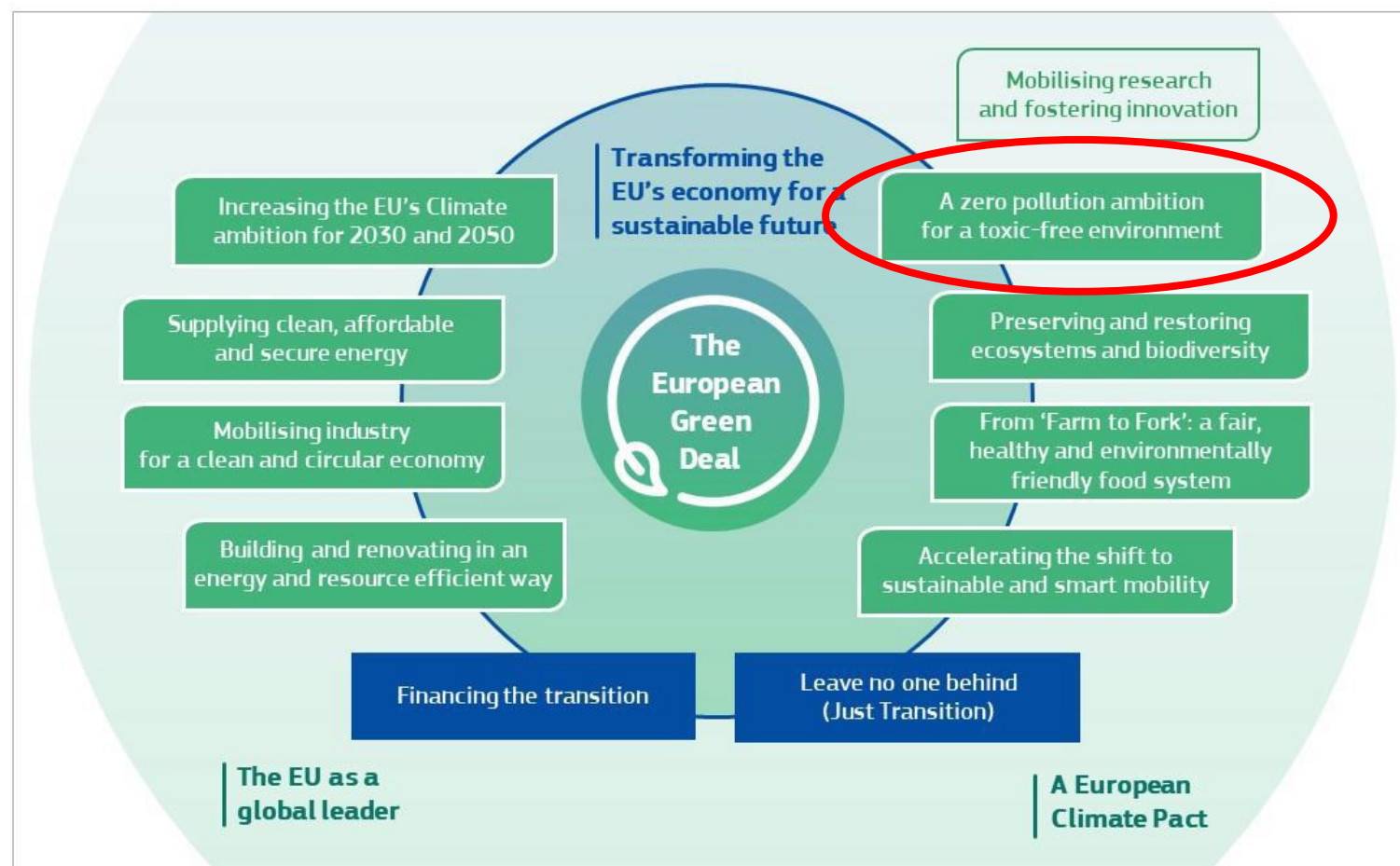
13:00 - 13:15	Opening and welcome	Paola Fisicaro, LNE
13:15 - 13:40	General project information and changes including WP 6	Dirk Arnold, PTB
13:40 - 14:05	WP 1 – Information and progress	Ben Russell, NPL
14:05 - 14:30	WP 2 – Information and progress	Tea Zuliani, IJS
14:30 - 14:45	Coffee break	
14:45 - 15:10	WP 3 – Information and progress	Valérie Lourenço, CEA
15:10 - 15:35	WP 4 – Information and progress	Betül Ari, TÜBİTAK
15:35 - 16:00	WP 5 – Information and progress	Simon Jerome, NMBU
16:00 - 16:15	Coffee break	
16:15 - 16:30	Statement by FTMC (5 min) Statement by LS-BABS (5 min) Statement by TRISKEM (5 min)	Andrius Puzas José Corcho Steffen Happel
16:30 - 17:00	Open discussion	All participants
17:00	Close	Paola Fisicaro, LNE

Introduction of MetroPOEM

➤ Key facts:

- ✓ Start date: 01 October 2022
- ✓ Duration: 36 months
- ✓ 23 partners from 14 countries contribute with in total 320 months of work!
- ✓ Websites:
 - <https://www.npl.co.uk/euramet/metropoem>
 - <https://www.euramet.org/research-innovation/search-research-projects/details/project/metrology-for-the-harmonisation-of-measurements-of-environmental-pollutants-in-europe>
- ✓ This project was selected for funding from the Green Deal Call 2021 of the European Partnership on Metrology research funding program: <https://www.metpart.eu/>

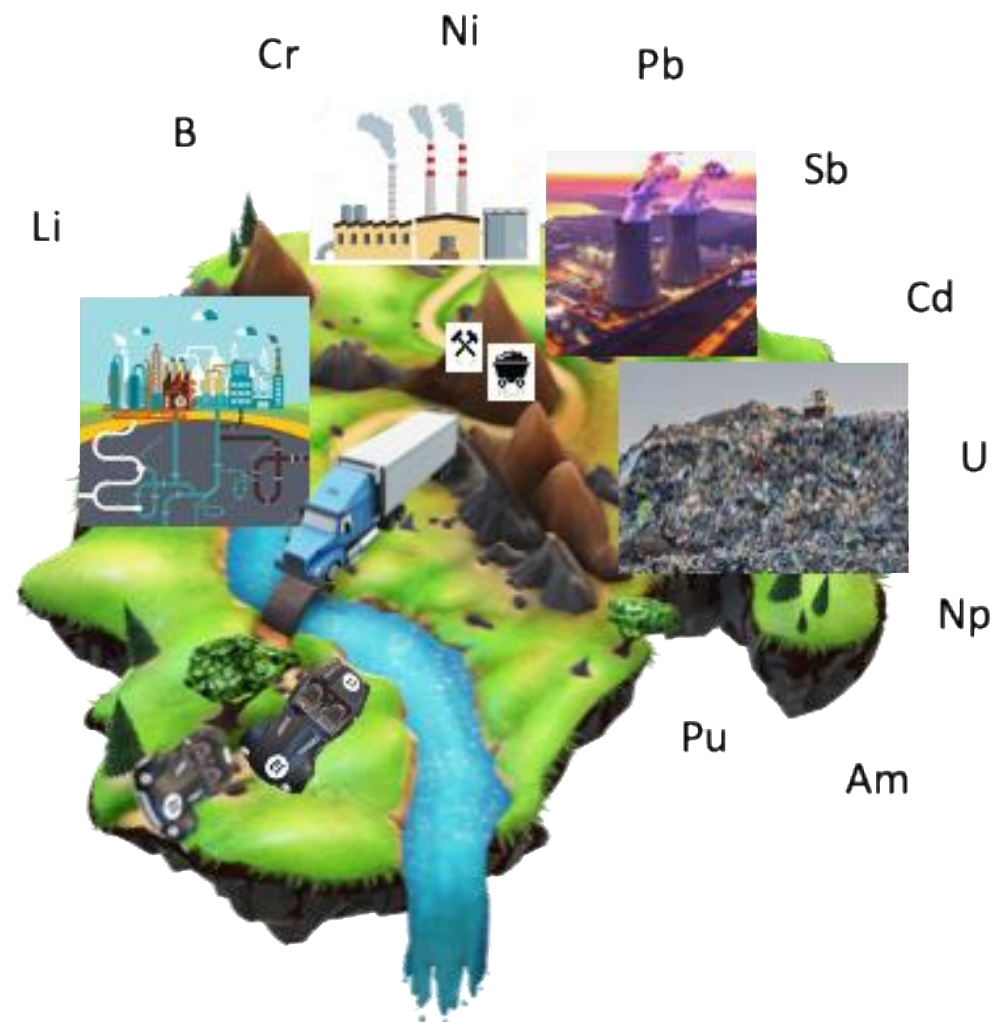
The European Green Deal, Document: “COM/2019/640 final”



Introduction of MetroPOEM

➤ Key Aspects:

- **The zero-pollution ambition promoted by the European Green Deal**, requires highly sensitive and state-of-the-art detection techniques for the measurement of ultra-low amounts of pollutants.
- **Mass spectrometry** is a key method,
 - ✓ with high potential for reducing measurement uncertainties and detection limits,
 - ✓ but there is no existing traceability chain for **radioactive elements**,
 - ✓ and there is a lack of SI-traceable isotope reference materials for **stable isotope ratios**.



Mass spectrometry systems included in the project

- **ICP-QMS** Inductively Coupled Plasma Quadrupole Mass Spectrometer
- **ICP-MS/MS** Inductively Coupled Plasma Tandem Mass Spectrometer
- **ICP-SFMS** Inductively Coupled Plasma Sector Field Mass Spectrometer
- **MC-ICP-MS** Multi-Collector Inductively Coupled Plasma Mass Spectrometer
- **SIMS** Secondary-Ion Mass Spectrometer
- **TIMS** Thermal Ionisation Mass Spectrometer
- **AMS** Accelerator Mass Spectrometer
- **ICP-TOF-MS** Inductively Coupled Plasma Time of Flight Mass Spectrometer
- **SNMS** Secondary Neutral Mass Spectrometer
- **HR-ICP-SF-MS** High Resolution Inductively Coupled Plasma Sector Field Mass Spectrometer
- **ICP-QQQ-MS** Triple quadrupole Inductively Coupled Plasma Mass Spectrometer

Work packages

WP6: Management and coordination

Radioactive Pollutants

WP1: Establish and compare the selectivity and detection limits of different mass spectrometers

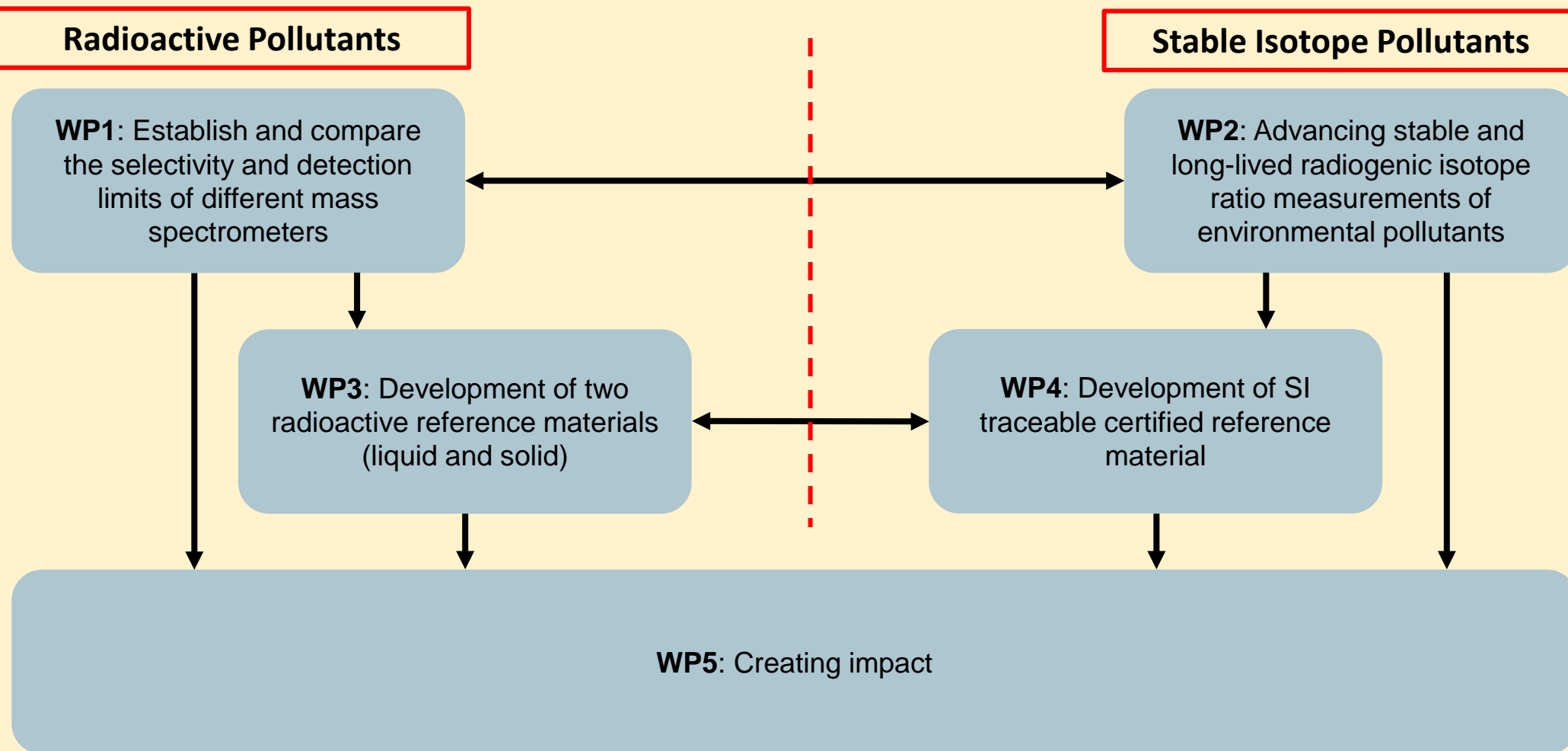
WP3: Development of two radioactive reference materials (liquid and solid)

Stable Isotope Pollutants

WP2: Advancing stable and long-lived radiogenic isotope ratio measurements of environmental pollutants

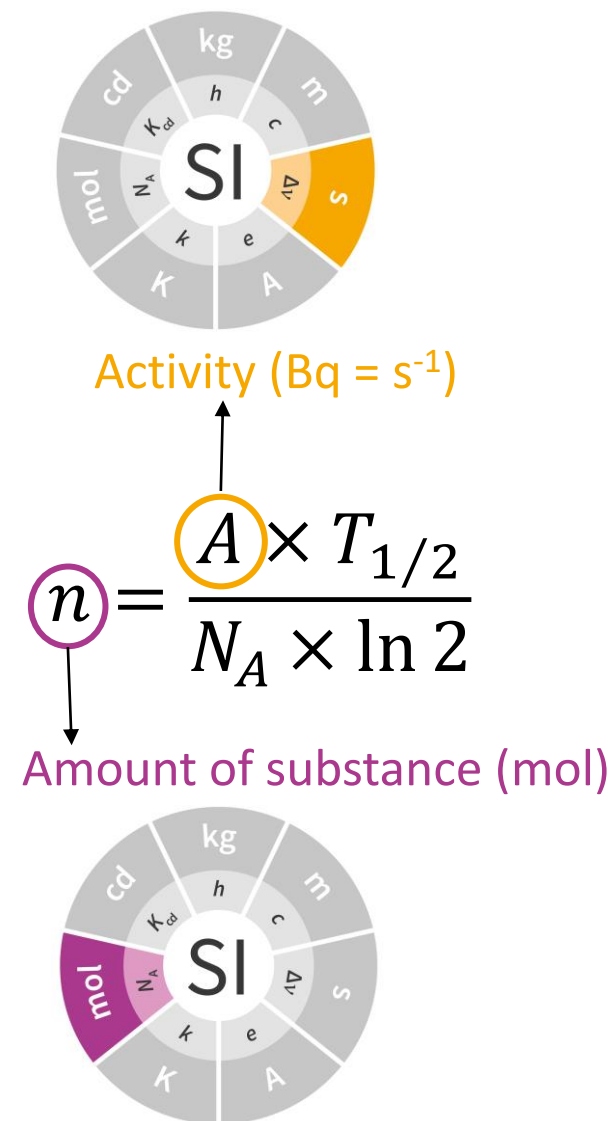
WP4: Development of SI traceable certified reference material

WP5: Creating impact



Impact of MetroPOEM

- **Establish link** between radiometric techniques and mass spectrometry, bridging the gap between the activity (Bq) and the amount of substance (mol) of an isotope
- Traceable aqueous radionuclide standards (U, Np, Pu, Am, Sr, Ra) suitable for mass spectrometry systems
- Close the **traceability gap** for isotope ratio measurement resulting from isotopic fractionation (mass bias)
- Guide on the use of mass spectrometry for **low level radionuclide detection**
- Report of different instrument's **advantages and limitations**
- Three SI-traceable **reference materials**
- Establish SI-traceable **calibration chain** for single collector ICP-MS
- **Harmonized methods** for measurement of polluting elements using mass spectrometric techniques



MetroPOEM @ BIPM

- **CCRI Webinar on “Mass spectrometry in Radionuclide Metrology” (17 February 2022)**
 - ✓ Website:
<https://www.bipm.org/en/committees/cc/ccri/wg/ccri-webinar/2022-02-17>
- **CCRI-CCQM Workshop on “The Use of Mass Spectrometry in Radionuclide Metrology” (14-16 February 2023)**
 - ✓ Website:
<https://www.bipm.org/en/committees/cc/ccri/wg/ccri-ccqm-ws/2023-02-14>
- **CCRI(II) Task Group on Mass Spectrometry (CCRI(II)-MS-TG)**
 - ✓ Website:
<https://www.bipm.org/en/committees/cc/ccri/wg/ccri-ii-ms-tg>



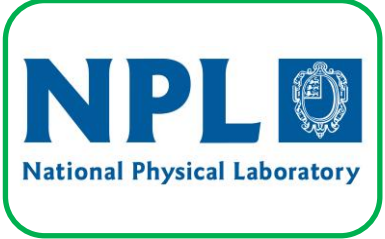
WP6



WP3



WP2



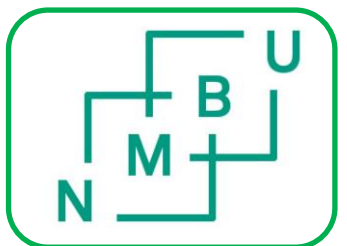
WP1



WP4



Consortium



WP5



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