CCRI Webinar Series

Mass Spectrometry in Radionuclide Metrology

17 February 2022

How We Got Here (Long-Lived Isotopes)

Each decay counted

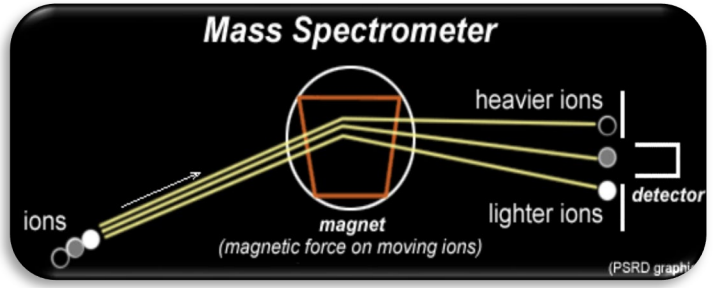
?

Every atom counted

- Applications in environmental measurements, nuclear forensics, site decommissioning, decay data, reference materials, etc., especially for long-lived isotopes
- Single-atom counting for radionuclide metrology presented at CCRI(II) meeting in 2015 (part of the CCRI strategy as medium-term action)
- Joint interest CCRI (Section II) and CCQM (Inorganic Analysis WG); “reintroduced” in CCRI(II) meeting 2021

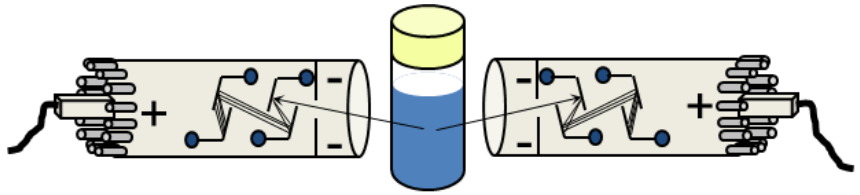
Challenges and Future Plans

- Limited facilities (both techniques)
- Choosing the right instrumentation
- Choosing the right matrices
- Choosing the right radionuclides
- RELATING MASS TO COUNTING RESULTS (and vice versa)



Trade Offs: matrix effects, mass interferences, memory effects, sample loss

Counting methods



Trade Offs: matrix effects, dead time, half life (counting TIME), impurities

Looking Ahead: Joint workshop (in person or virtual) later in 2022 on uses, needs, challenges and advances in using MS in RM activities.

Our Speakers

- Richard Essex (National Institute of Standards and Technology, USA): complimentary measurements of radioactive materials
- Ben Russell (National Physical Laboratory, UK): developments in MS-relevant reference materials
- Dirk Arnold (Physikalisch-Technische Bundesanstalt, Germany): European project ("Metrology for the harmonization of measurements of environmental pollutants in Europe") to start this year