

Environmental monitoring



The Radioactivity Suite at NPL

The measurement of radioactivity in the environment is a regulatory requirement around sites where significant amounts of radioactive materials are used or stored. NPL provides the primary standards, reference materials and laboratory proficiency test exercises needed to support measurements of environmental samples by analysis laboratories.

Radioactivity is present in the environment from naturally-occurring radioactive materials and from man-made sources (such as the nuclear power industry). National and international regulations require that the levels of radioactivity in environmental samples and in foodstuffs are monitored regularly, to protect the general public.

With this project, NPL aims to support the analytical laboratories that carry out these measurements. The first stage is the realisation of primary standards of radioactivity for radionuclides needed for the measurements.

The second stage is the provision of a unique range of very low activity standardised solutions (around 1 Bq per ml of solution), based on the primary standards. These solutions have the advantage that they are 'ready-to-use', improving the accuracy of calibration and reducing the risk of contaminating expensive analytical instrumentation. Preparing these low-level standards requires NPL's specialist radiochemistry facilities. Additionally, NPL has started to provide solid reference materials (e.g. neutron-activated concrete powder and synthetic reference materials based on SiO₂) to serve as quality control materials to achieve traceability, method validation and instrument calibration.

The project also includes organising annual UKAS accredited (ISO 17043) Environmental Radioactivity Proficiency Test Exercises (see www.npl.co.uk/pte). These exercises are used by the vast majority of the UK environmental monitoring laboratories and several overseas laboratories to demonstrate the accuracy of their measurements, for compliance with quality assurance management systems such as ISO 17025.

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