



Enhanced Neutron Detection Technology

Technical Summary

Existing neutron instruments struggle to accurately measure across the energy spectrum due to the challenges presented by moderating and detecting.

Public Health England have developed and protected a method which enhances the ability of thermal neutrons to incident on the detector. Within the detection sphere, six air-filled guides penetrate the shells and radiate symmetrically along the cardinal directions, from the lead layer surrounding the external wall of the counter to close to the outside surface of the detector.

The technology is tested and ready for transfer to an industrial partner for integration into their product.

Licensees will benefit from:

- higher sensitivity than competitors
- reduced under-response at low and high energies
- reducing the over-response typically exhibited at intermediate energies
- proven negligible response to photons
- development consultancy to integrate technology into existing models
- support of our pioneering facilities - ensuring full calibration and compliance with national and international primary standards.

Patent information:

The concept is protected by international patent and is granted in EuropPCT/EP2008/065612, UK Patent 0209210.4 European Patent 2223156, US Patent 91529,101Bz, Australian Patent 2008322866, Japanese Patent 2014/055850 and a Canadian patent P37731CA-PCT-PJG/SLB.

Next steps:

PHE has a history of innovation and aim is to facilitate the transfer of our distinctive expertise for the benefit of the public. If you would like to find out more about this technology, please contact us:

www.phe-protectionservices.org.uk/business

Key areas in our portfolio include:

Instrument testing and development

Our pioneering facilities lead the UK in the testing of radiation protection instrumentation, ensuring full calibration and compliance with national and international primary standards. We are a leading source of expertise and innovation in the fields of type-testing, instrumentation development, and design consultancy. We can also offer full nuclear delicensing and decommissioning support.

Personal dosimetry

PDS is the UK's leading provider of high-quality dosimetry, measuring and recording radiation doses received by our customers and their employees. All our services are Approved Dosimetry Services (ADS) - they have been approved by the British Health and Health Safety Executive under the Ionising Radiations Regulations 1999.

Emergency preparedness

Our Radiation Emergency Preparedness fulfils an advisory role to government alongside industry. We provide a range of radiation emergency related consultancy, training and research and development services to government, industry and others.

Additional capabilities

- Partial and whole-body dose monitoring
- Radiochemistry analytical laboratories
- Home and workplace radon gas assessments

Products and software

Guided neutron unit

PHE has developed a highly sensitive portable neutron testing device, capable of measuring an energy range from thermal, to TeV.

PC-CREAM

PC-CREAM is an application for performing radiological impact assessments of routine and continuous discharges of radionuclides to the environment. It can be used to assess both individual and collective doses to the public.

PACE

PACE is an application for performing probabilistic assessments of the off-site consequences of accidental release of radioactive material to the atmosphere.

IMBA

IMBA software is a suite of modules, used for internal dosimetry measurements, that implement the ICRP models for estimation of intakes and doses.

Next steps

If you would like to find out more about PHE's radiation protection training portfolio please contact:

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