



PEOPLE  
WHO  
ANALYSE

## PRODUCTS AND SERVICES:

# Radiometric Measurements

## OVERVIEW

Cavendish Nuclear has over 40 years of experience providing radiological and radiometric measurements, support and advice to nuclear facilities. A key component of our service has been the provision of on-site non-destructive assay measurements in support of operating plant, decommissioning projects and waste storage/treatment facilities.

## KEY BENEFITS

- Assay and characterisation of radioactive wastes
- Segregation of wastes between ILW, LLW, LLW-alpha, VLLW, exempt and other special categories
- Gamma imaging to provide information on the spatial distribution of radioactivity
- Assay of wastes in bags, drums, boxes, 1m<sup>3</sup> containers, LLW approved ISO-containers, WAMAC containers, ISO skips and other transport packages and containers
- Identification and quantification of radionuclides in waste or process environments
- Measurements of radioactive contamination in the ground
- Detection and quantification of contamination even if covered by layers of soil, grease or paint
- Production of 3D dose maps in support of decommissioning
- In-situ measurements of wastes and structures
- Measurement of contamination in drains, culverts, boreholes and blind tubes
- Measurement of Pu and U isotopic compositions as bulk products or waste contaminants
- Air/liquid interface detection using neutron backscatter techniques
- Rapid response measurements in support of Homeland Security or to help plants to understand and manage abnormal conditions
- Assessment of waste discharges
- Underwater measurements in spent fuel storage ponds

## OUR SERVICE IN DETAIL



A range of sampling and measurement techniques.

### Output Based Services

Cavendish Nuclear deliver output based services where we will supply, for example, a full measurement service to an agreed programme and quality, and be paid only upon successful results.

The major advantage this offers to our customers is that any additional capital equipment or skills required are provided by Cavendish Nuclear. An example of an output based service is performance based contract measured by the number of waste drums assayed per month.

### Specialist Measurement Services

Cavendish Nuclear's unrivalled team of physicists and engineers provide fast and effective solutions for in-situ non-destructive assay measurements in support of operating plants, decommissioning projects and waste storage/treatment plants. This is often related to one-off problems experienced by plant managers who need help in assessing specific issues related to radioactive materials in their plant.

### Technical Consultancy

Cavendish Nuclear offers technical consultancy services relating to radiological or radiometric measurements, including:

- technical assessments
- performance assessments
- software modifications and enhancements using our IEC61508 SIL compliant processes

- documentation in support of RWMD Letter of Compliance
- theoretical assessments of neutron activation of materials

### Tools and Techniques

Cavendish Nuclear has a wide range of portable and transportable assay equipment and measurement techniques that can be deployed rapidly and cost effectively. This may be supplemented by the design, specification and supply of bespoke assay systems if required.

Available techniques include:

- low resolution gamma spectrometry
- high resolution gamma spectrometry
- isotopic composition codes including FRAM and MGA
- dose rate measurements
- gamma imaging
- neutron measurements
- sampling and radiochemical analysis
- activation analysis

Cavendish Nuclear's specialist measurement equipment includes:

- RadScan® real time portable gamma-ray imaging system
- DISPIM® neutron based plutonium assay and imaging system
- DrumScan® LRGS Alpha
- DrumScan® LRGS Mk II
- LARCh large area radiological characterisation service

Other Cavendish Nuclear owned equipment includes ISOCS, ISOCART, transSPEC, Cartogam, various HPGE

detectors, FIDLER probes and more, enabling the right tools for a specific task without over reliance on a particular supplier.

Cavendish Nuclear has significant experience in all of the key computer modelling codes, including:

- MCNP
- RANKERN
- Atila
- Mercurad
- SYNTH
- MONK
- MCBEND
- MicroSHIELD
- FISPIN / FISPACT
- IMAGES / GIS systems
- ArcGIS systems

### Key Customers

- Sellafield Ltd
- Low Level Waste Repository Ltd
- EDF (British Energy)
- DSRL (Dounreay)
- Magnox Ltd
- Low Level Waste Repository Ltd (LLWR)
- Ministry of Defence
- HM Naval Base Rosyth
- Rolls Royce
- RSRL (Harwell)
- Environment Agency



### FOR MORE INFORMATION, CONTACT:

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