

# Traceability for cancer therapy

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The secondary standard ionisation chambers at NPL that were used in the establishment of traceable  $^{177}\text{Lu}$  measurements at hospitals.

Scientists from the National Physical Laboratory (NPL) have worked to establish traceability for a molecular radiotherapy treatment for patients suffering from neuroendocrine tumours.

Neuroendocrine tumours are usually found in the [intestine](#) or lungs and arise from hormone-producing cells. A new treatment involves the administration of a peptide, radiolabelled with the beta- and gamma-emitting radionuclide Lutetium-177 ( $^{177}\text{Lu}$ ), which irradiates the widespread [tumour cells](#) without causing excessive damage to surrounding healthy tissue. The treatment can also be followed by [nuclear imaging](#), taking advantage of the gamma-emission of the radionuclide.

Following a series of clinical trials, this radiopharmaceutical is now beginning to be used routinely for molecular radionuclide therapy (MRT) throughout the UK and Europe.

A team of NPL scientists first established a link to the International Reference System by standardising  $^{177}\text{Lu}$  as part of an international comparison in 2011. Once that had been established, NPL invited UK and European hospitals that regularly use this radionuclide to participate in a blind exercise to measure the radioactivity in samples of  $^{177}\text{Lu}$ . From the results of this exercise, the hospitals could demonstrate traceability, ensuring regulatory compliance and [patient safety](#). The results showed that the majority of participants have the capability to measure the  $^{177}\text{Lu}$  activity to within 2%, with only three participants showing variations higher than this.

The same team of scientists is now working on the next important step towards establishing traceability for  $^{177}\text{Lu}$  imaging, within the framework of a European Metrology Research Programme (EMRP) project called 'Metrology for Molecular Radiotherapy'.

Provided by National Physical Laboratory

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