INFORMATION SHEET – NPL NUCLEAR INDUSTRY PTE 2025

Technical

This year's drum (200 L) contains 240 HDPE bottles (in five 'layers' of 48), each filled with vermiculite. A number of these bottles also contain a single plastic vial containing ion-exchange resin. All of these 'resin vials' have been spiked with standardised radioactive solution (containing ^{60}Co, ^{137}Cs and ^{241}Am).

The 500 mL bottles used are HDPE Fisherbrand™ Wide-Mouth Field Sample Bottles 74 × 168 mm (dia. × h) (Product Code: 11907964) (Link to product specifications, see Page 37). These bottles were filled with Dupré micafil exfoliated vermiculite (Link to product specifications). The 'resin vials' were made by adding DOWEX 1X8 resin (Link), spiked with active solution to 20 mL Revvity plastic liquid scintillation counting vials (Link to product specifications). These vials have a height with cap of 60.8 mm, dia. of 27.0 mm with a wall thickness of 1 mm.

The overall activity concentration of the drum (i.e. activity/total mass of **drum contents**) lies in the range of 3 – 30 Bg g^{-1}.

Mass of **empty drum** = 19.686 ± 0.030 kg (*k* = *1*)

Mass of **drum contents** = 25.927 ± 0.041 kg (*k* = 1)

Total mass of **drum and contents** = 45.614 ± 0.032 kg (*k* = 1)

Please be aware that a single A4 sheet of paper, with information required to meet dangerous goods regulations, has placed in the top of the drum. This has not been taken into consideration for the mass of the drum contents.

Delivery

The drum will be delivered to (and collected from) the participants on agreed dates as per the schedule below. The drum will be an Excepted Package.

Participants must have arrangements in place for moving the drum off, from and onto the courier's van and must ensure that the drum has the address label provided by NPL attached before it is returned to the courier.

Data reporting

The "Techniques Form" and "Reporting Form" for method and data reporting respectively have been sent out separately to participant technical contacts. All completed forms must be returned by the 'first deadline' which is provided in the schedule below.

NPL will then disclose the locations of the 'resin vials' and invite participants to submit *additional* results (by the second deadline) should they wish. Note that 'first deadline' *results* and any *corrections* must be submitted prior to the disclosure of the 'resin vials' location.

This is a proficiency test exercise and information, such as measurement results, relating to the exercise must not be shared with other participants.

Schedule

Action	Dates
Interested laboratories to reply to this mailshot and send in purchase orders	By 18th April 2025
NPL to contact each laboratory, advise if they can be accommodated, and, if so, agree receipt and dispatch dates	By 18th June 2025
Participants to submit Purchase Orders	Within two weeks of notification of receipt and despatch dates
UK Participants to measure drum	Within agreed dates in the period 4th of July to 12th September 2025
Non-UK Participants to measure drum	Within agreed dates in the period 12th September 2025 and 12th of December 2025
Participants to submit results (not knowing location of resin bottles)	By 16th January 2026 ('first deadline')
NPL to disclose location of resin bottles	23rd January 2026
Participants, if they wish, to submit additional results	By 6th February 2026 ('second deadline')
NPL to disclose activity concentrations	13th February 2026
NPL to issue report	March 2026

Further Information

The PTE item (drum) for this exercise will be produced using NPL standards added gravimetrically. The Assigned Value for each radionuclide will be calculated from the division of the standardised activity per unit mass of the original standard solution. The activities per unit mass of the radionuclides in the drum are traceable to national standards of radioactivity, and therefore to the international measurement system.

Please be aware when using the PT items for validation that they are frequently produced from standards of radioactivity supplied by NPL.

Participants' results will be analysed to provide the deviation, and the associated standard uncertainty, from the NPL assigned value(s). It is expected that assigned values will be provided for all individual radionuclides.

Specific information on determination of the assigned value and how performance is evaluated will be detailed in the associated NPL report.