

Calibrating a secondary standard ionization chamber for photon-emitting radionuclides in ISO 10R vials

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NIST is expanding its capability to calibrate radionuclides using geometries to include direct measurement in containers other than NIST-1 standard flame-sealed borosilicate glass ampoules. The radiopharmaceutical industry commonly uses crimp-sealed septum-closure vials. To take advantage of tight manufacturing tolerances NIST has chosen the 10R vial. This vial conforms to ISO 8362-4:2011 standards for injection containers. We have brought a Centronic IG12 4 π ionization chamber online with a re-entrant well large enough to accommodate the larger diameter ISO 10R vial, tested the chamber for optimal source placement, fabricated a new source holder that can accept both flame sealed ampoules and 10R vials, and begun cross calibrating sources using the new ionization chamber with our other well-calibrated ionization chambers. This work will show the approach we have taken in bringing this service to market and show preliminary results in our cross-calibration efforts—both by modeling the new chamber response and comparing that to well-known gamma photon emitting sources.