

Wichuta Pradit 2010: Production and Quality Control of Iodine-131 and Barium-133 Standard Sources. Master of Science (Applied Radiation and Isotope), Major Field: Applied Radiation and Isotope, Department of Applied Radiation and Isotope. Thesis Advisor: Associate Professor Pannee Pakkong, M.S. 100 pages.

Standard sealed source of Iodine-131 in ring type and Barium-133 in ring and acrylic hole types had been produced for calibrating gamma ray spectrometry by using gravimetric dispensing the reference Iodine-131 and Barium-133 solution. The results of radioactivity for Iodine-131 standard source ring type were calculated in between 0.151-0.175 microcurie and Barium-133 standard source ring and acrylic hole types in between 0.001-0.580 and 0.030-0.189 microcurie respectively.

The quality control of Iodine-131 standard source were tested in 4 conditions following to Production techniques and quality control of sealed radioactive source IAEA-TECDOC 1512 as wipe impact leakage and homogeneity test. Half-life of Iodine-131 was calculated from photostimulated luminescence intensity by using digital radiography reader (BAS 2500) for leakage and homogeneity tests. The quality control of Barium-133 standard source were tested in 4 conditions following Radiation Protection – Sealed Radioactive Source 2919 as wipe impact leakage and leaching test. Optimum thickness value of polyethylene for sealing Barium-133 standard source was calculated from photostimulated luminescence intensity by using digital radiography reader (BAS 2500) and gamma energy of Barium-133 was determined following to Monographie BIPM-5 by measuring with high pure germanium of planar type detector. The results from all conditions for quality control of Iodine-131 and Barium-133 standard sources production had been characterized. The methods and quality control can be used for production standard source .

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