National Metrology Institutes

The following bibliography lists publications originating at NMIs and designated institutions dealing with the measurement of calibration factors for radionuclide calibrators. Also included are publications detailing the effects of varying aspects of the measurements, such as container, solution volume, or solution composition, and the effect on the results.

A summary of these measurements, by radionuclide, has been tabulated in an Excel spreadsheet, available here (link).

The list and summary are works in progress. Please send suggestions to the ICRM Life Sciences Working Group Coordinator: jeffrey.cessna@nist.gov.

Applied Radiation and Isotopes 66 (2008) 994–997

Quality audit programme for ^{99m}Tc and ^{131}I radioactivity measurements with radionuclide calibrators

Leena Joseph, R. Anuradha, D.B. Kulkarni

Radiation Safety Systems Division, Bhabha Atomic Research Centre, Mumbai 400 085, India

Applied Radiation and Isotopes 66 (2008) 988–993

Radionuclide calibrator measurements of ^{18}F in a 3ml plastic syringe

J.T. Cessna[a,*], M.K. Schultz[a], T. Leslie[b], N. Bores[c]

[a] *National Institute of Standards and Technology, 100 Bureau Drive MS8462, Gaithersburg, MD 20899, USA*

[b] *PETNET Solutions, University of Tennessee Medical Center at Knoxville, Knoxville, TN 37920, USA*

[c] *Oak Ridge National Laboratories, P.O. Box 2008 MS6366, Oak Ridge, TN 37831, USA*

Applied Radiation and Isotopes 66 (2008) 976–980

Primary standardization of ^{67}Ga radiopharmaceuticals

Ming-Chen Yuan[a,b], Ing-Jane Chen[a], Chu-Fang Wang[b,*]

[a] *Health Physics Division, Institute of Nuclear Energy Research, No. 1000, Wunhua Road, Jiaan Village, Longtan Township,*
Taoyuan County 32546, Taiwan, ROC

[b] *Department of Biomedical Engineering and Environmental Sciences, National Tsing Hua University, Hsinchu 300, Taiwan, ROC*

Applied Radiation and Isotopes 66 (2008) 965–971

Calibration of a radionuclide calibrator system as a Bulgarian standard for activity

H. Schrader[a,*], K. Kossert[a], J. Mintcheva[b]

[a] *Physikalisch-Technische Bundesanstalt, Department 6.1, Bundesallee 100, D-38116 Braunschweig, Germany*

[b] *National Centre of Metrology, G.M. Dimitrov Blvd. 52B, 1040 Sofia, Bulgaria*

Applied Radiation and Isotopes 65 (2007) 581–592

Activity standardisation of ^{18}F and ionisation chamber calibration for nuclear medicine

H. Schrader*, R. Klein, K. Kossert
Physikalisch-Technische Bundesanstalt (PTB), Department 6.1, Bundesallee 100, D-38116 Braunschweig, Germany

Applied Radiation and Isotopes 64 (2006) 1380–1383

Absolute counting of ^{188}Re radiopharmaceuticals

Ming-Chen Yuan[a,b,*], Hsiao-Fang Pang[a], Chu-Fang Wang[b]
[a] *National Radiation Standard Laboratory, Institute of Nuclear Energy Research, No. 1000, Wunhua Rd., Jiaan Village, Longtan Township,*
Taoyuan County 32546, Taiwan, ROC
[b] *Department of Atomic Science, National Tsing Hua University, Hsinchu 300, Taiwan, ROC*

Applied Radiation and Isotopes 64 (2006) 1351–1359

Review: Radionuclide metrology in the life sciences: Recent advances and future trends

B.E. Zimmerman*
Dosimetry and Medical Radiation Physics Section, Division of Human Health, International Atomic Energy Agency, Wagramer Strasse 5, Box 200, A-1400 Vienna, Austria

Applied Radiation and Isotopes 64 (2006) 485–489

Calibration of the Capintec CRC-712M dose calibrator for ^{18}F

L. Mo [a,b,*], M.I. Reinhard[a], J.B. Davies[a,b], D. Alexiev[a], C. Baldock[b]
[a] *Australian Nuclear Science and Technology Organisation (ANSTO), New Illawarra Road, Lucas Heights, NSW 2234, Australia*
[b] *Institute of Medical Physics, School of Physics, University of Sydney, NSW 2006, Australia*

Applied Radiation and Isotopes 63 (2005) 193–199

Development of activity standard for ^{90}Y microspheres

L. Mo[a,b,*], B. Avci[c], D. James[c], B. Simpson[d], W.M. Van Wyngaardt[d],
J.T. Cessna[e], C. Baldock[b]
[a] *Australian Nuclear Science and Technology Organisation, New Illawarra Road, Lucas Heights, NSW 2234, Australia*
[b] *Institute of Medical Physics, University of Sydney, NSW 2006, Australia*
[c] *SIRTeX Medical Limited, Unit F6 Parkview, 16 Mars Road, Lane Cove, NSW 2066, Australia*
[d] *CSIR National Metrology Laboratory, 15 Lower Hope Road, Rosebank, Cape Town 7700, South Africa*
[e] *National Institute of Standards and Technology, Gaithersburg, MD 20899, USA*

Applied Radiation and Isotopes 63 (2005) 71–77

Calibration of the NPL secondary standard radionuclide calibrator for the new 10R Schott, Type 1+ vials

M. Baker
Quality of Life Division, National Physical Laboratory, Ionising Radiation Metrology Consultants Ltd., 152 Broom Road, Teddington, Middlesex TW11 0LW, UK

The Journal of Nuclear Medicine • Vol. 45 • No. 3 • March 2004 • 450–454

Accurate Dose Calibrator Activity Measurement of ^{90}Y-Ibritumomab Tiuxetan

Jeffry A. Siegel, PhD[1]; Brian E. Zimmerman, PhD[2]; Kory Kodimer, PhD[3]; Mary A. Dell, MS[4]; and William E. Simon, MS[5]
[1]Nuclear Physics Enterprises, Wellington, Florida; [2]National Institute of Standards and Technology, Gaithersburg, Maryland; [3]Cardinal Health Nuclear Pharmacy Services, Woodland Hills, California; [4]Capintec, Inc., Ramsey, New Jersey; and [5]Sun Nuclear Corp., Melbourne, Florida

Applied Radiation and Isotopes 60 (2004) 535–538

Activity measurements with radionuclide calibrators in the Czech Republic

Veronika Olšovcová*
Czech Metrology Institute, Inspectorate for Ionizing Radiation, Radiova 1, Prague, 102 00 Czech Republic

Applied Radiation and Isotopes 60 (2004) 511–517

Experimental determination of calibration settings for plastic syringes containing solutions of ^{90}Y using commercial radionuclide calibrators

B.E. Zimmerman*, J.T. Cessna, M.A. Millican
Ionizing Radiation Division, National Institute of Standards and Technology, Department of Physics Laboratory, 100 Bureau Drive, Gaithersburg, MD 20899-8462, USA

Applied Radiation and Isotopes 60 (2004) 505–510

Establishment of transfer standard for holmium-166-DOTMP

J.T. Cessna*, B.E. Zimmerman, M.P. Unterweger, D.B. Golas
Ionizing Radiation Division, National Institute of Standards and Technology, 100 Bureau Drive Stop, 8462 Gaithersburg, MD 20899-8462, USA

Applied Radiation and Isotopes 59 (2003) 367–372

Syringe calibration factors for the NPL Secondary Standard Radionuclide Calibrator for selected medical radionuclides

D.K. Tyler[a], M.J. Woods[b,*]
[a] Centre for Acoustics and Ionising Radiation, National Physical Laboratory, Teddington, Middlesex TW11 0LW, UK
[b] Ionising Radiation Metrology Consultants Ltd, 152 Broom Road, Teddington, Middlesex TW11 9PQ, UK

Applied Radiation and Isotopes 56 (2002) 957–958

Technical note: Results obtained in the metrological certification of a commercially available radionuclide calibrator

A.C. Razdolescu[a], M. Sahagia[a,*], A. Luca[a], S. Bercea[a], C. Dumitrescu[b],
H. Schrader[c]
[a] National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), PO BOX MG-6, RO-76900, Bucharest, Romania
[b] National Institute of Metrology, Bucharest, Romania
[c] Physikalisch-Technische Bundesanstalt, D-38116 Braunschweig, Germany

Medical Physics Vol. 29 No.7, July 2002, 1547-1555

Experimental investigation of dose calibrator response for ^{125}I brachytherapy solutions contained in 5 mL plastic syringes and 2 mL conical glass v-vials as a function of filling mass

B. E. Zimmerman and J. T. Cessna
Physics Laboratory, National Institute of Standards and Technology, 100 Bureau Drive Stop 8462, Gaithersburg, Maryland 20899-8462
J. A. Dorton
Proxima Therapeutics, Inc. 2555 Marconi Drive, Suite 220, Alpharetta, Georgia 30005-2066

Applied Radiation and Isotopes 56 (2002) 349–356

Precise measurement of the activity of ^{186}Re, ^{188}Re radiopharmaceuticals

Maria Sahagia, Anamaria Cristina Razdolescu, E.L. Grigorescu, A. Luca, C. Ivan*
National Institute of R&D for Physics and Nuclear Engineering ''Horia Hulubei'', IFIN-HH, PO BoxMG-6, RO 76900, Bucharest, Romania

Applied Radiation and Isotopes 56 (2002) 343–347

NPL secondary standard radionuclide calibrator. Syringe calibration factors for radionuclides used in nuclear medicine

D.K. Tyler*, M. Baker, M.J. Woods
NPL, Queens Road, Teddington, Middlesex TW11 0LW, UK

Applied Radiation and Isotopes 56 (2002) 327–330

Standardisation of ^{11}C

D.H. Woods[a,]*, M.I. Baker[a], J.D. Keightley[a], L.J. Keightley[a], J.L. Makepeace[a], A.K. Pearce[a], A.P. Woodman[a], M.J. Woods[a], S.A. Woods[a], S. Waters[b]
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[b] *Imaging Research Solutions Ltd., Cyclotron Building, Hammersmith Hospital, London W12 0NN, UK*

Applied Radiation and Isotopes 56 (2002) 315–320

The standardization of ^{188}W/^{188}Re by 4πβ liquid scintillation spectrometry with the CIEMAT/NIST ^{3}H-standard efficiency tracing method

Brian E. Zimmerman*, Jeffrey T. Cessna, Michael P. Unterweger
Physics Laboratory, National Institute of Standards and Technology, 100 Bureau Dr., Stop 8462, Gaithersburg, MD 20899-8462, USA

Applied Radiation and Isotopes 54 (2001) 113-122

Radioassays and experimental evaluation of dose calibrator settings for ^{18}F

B.E. Zimmerman[a,]*, G.J. Kubicek[a], J.T. Cessna[a], P.S. Plascjak[b], W.C. Eckelman[b]
[a] *Physics Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, USA*
[b] *PET Department, National Institutes of Health, Bethesda, MD, USA*

Applied Radiation and Isotopes 54 (2001) 623-631

The standardization of ^{177}Lu by 4πβ liquid scintillation spectrometry with ^{3}H-standard efficiency tracing

B.E. Zimmerman[a,]*, M.P. Unterweger[a], J.W. Brodack[b]

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[b] *Nuclear Medicine R&D, Mallinckrodt, Inc. St. Louis, MO 63134, USA*

Applied Radiation and Isotopes 52 (2000) 615-619

Experimental determinations of commercial "dose calibrator" settings for nuclides used in nuclear medicine

B.E. Zimmerman*, J.T. Cessna
Physics Laboratory, National Institute of Standards and Technology, Gaithersburg, MD 20899, USA

Applied Radiation and Isotopes 52 (2000) 633-636

An ionization chamber as a secondary standard for activity

A. Švec[a,]*, H. Schrader[b]
[a] *Slovak Institute of Metrology (SMUÂ), 842 55, Bratislava, Slovak Republic*
[b] *Physikalisch-Technische Bundesanstalt (PTB), D-38116, Braunschweig, Germany*

Applied Radiation and Isotopes 52 (2000) 581-584

Standardisation and decay data of ^{186}Re

D.H. Woods*, M. Ciocanel, L.J. Husband, J.D. Keightley, P. de Lavison,
S. Lineham, M.J. Woods, S.A. Woods
Centre for Ionising Radiation Metrology, National Physical Laboratory, Teddington, Middlesex TW11 0LW, UK

Applied Radiation and Isotopes 52 (2000) 325±334

Calibration and consistency of results of an ionization-chamber secondary standard measuring system for activity

Heinrich Schrader
Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, D-38116 Braunschweig, Germany

Journal of Nuclear Medicine Technology • Vol. 28 • 2000 • 264–270

Experimental Determination of Dose Calibrator Settings and Study of Associated Volume Dependence in V-Vials for Rhenium-186 Perrhenate Solution Sources

Brian E. Zimmerman and David W. Pipes
Physics Laboratory, National Institute of Standards and Technology, Gaithersburg, Maryland; and Nuclear Medicine and Pharma-Device R&D, Mallinckrodt, Inc., St. Louis, Missouri

Journal of Nuclear Medicine Vol. 40 No. 9 September 1999, 1508-1516

A New Experimental Determination of the Dose Calibrator Setting for ^{188}Re

Brian E. Zimmerman, Jeffrey T. Cessna, Michael P. Unterweger, Alex N. Li, James S. Whiting and F. F. (Russ) Knapp, Jr.
Physics Laboratory, National Institute of Standards and Technology, Gaithersburg, Maryland
Department of Medical Physics and Imaging, Cedars-Sinai Medical Center, Los Angeles, California; and Life Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee

Applied Radiation and Isotopes 51 (1999) 515±526

The standardization of 62Cu and experimental determinations of dose calibrator settings for generator-produced ^{62}CuPTSM

B.E. Zimmerman*, J.T. Cessna
Physics Laboratory, National Institute of Standards and Technology, Gaithersburg, MD 20899, USA

Applied Radiation and Isotopes 49 (1998) 317-328

The standardization of potential bone palliation radiopharmaceutical ^{117m}Sn(+4)DTPA

B.E.Zimmerman, J.T. Cessna, and F.J. Schima
Physics Laboratory, National Institute of Standards and Technology, Gaithersburg, MD 20899, USA

Physics in Medicine and Biology 38 (1993) 1157-1164

Calibration of the NPL secondary standard radionuclide calibrator for ^{192}Ir Brachytherapy sources

J.P. Sephton, M.J. Woods, M.T. Rossiter, T.T. Williams, J.C.J. Dean, G.A. Bass, and S.E.M. Lucas
National Physical Laboratory, Teddington, Middlesex, TW11 OLW, UK

Journal of Nuclear Medicine • Vol. 28 • 1987 • 1478-1483

Effects of Varying Geometry on Dose Calibrator Response: Cobalt-57 and Technetium-99m

Jacqueline M. Calhoun, Daniel B. Golas, and Susan G. Harris
National Bureau of Standards, Radioactivity Group, Gaithersburg, Maryland; Atomic Industrial Forum, Incorporated, Bethesda, Maryland; and E.I. du Pont de Nemours Company Incorporated, Biomedical Products Department, North Billerica, Massachusetts