

ANHANG

LITERATUR

- [1] Berichte „Umweltradioaktivität und Strahlenbelastung - Jahresbericht“ ab 1997, Hrsg: Bundesministerium für Umwelt, Naturschutz, nukleare Sicherheit und Verbraucherschutz (BMUV), Bonn
https://doris.bfs.de/jspui/handle/urn:nbn:de:0221-2015060312762/browse?type=dateissued&submit_browse=Er-scheinungsdatum
- [2] Der aktuelle Katalog ist auf der Internetseite der PTB (www.ptb.de) verfügbar. Pfad: Home > Struktur & Abteilungen > Abteilungen > Abt. 6 Ionisierende Strahlung > 6.1 Radioaktivität > 6.11 Aktivitätseinheit > Herstellung und Abgabe von Aktivitätsnormalen
- [3] Kossert, K., Mougeot, X.: Improved activity standardization of $^{90}\text{Sr}/^{90}\text{Y}$ by means of liquid scintillation counting. *Applied Radiation and Isotopes* 168 (2021) 109478, <https://doi.org/10.1016/j.apradiso.2020.109478>
- [4] Kossert, K., Nähle, O.J., Honig, A., Röttger, S.: Activity standardization by means of liquid scintillation counting and determination of the half-life of ^{89}Zr . *Applied Radiation and Isotopes* 181 (2022) 11078, <https://doi.org/10.1016/j.apradiso.2021.110078>
- [5] Kossert, K., Bobin, C., Chisté, V., Fréchou, C., Lourenço, V., Nähle, O., Sabot, B., Thiam, C.: A bilateral comparison between LNHb and PTB to determine the activity concentration of the same ^{125}I solution. *Applied Radiation and Isotopes* 200 (2023) 110947, <https://doi.org/10.1016/j.apradiso.2023.110947>
- [6] Takács, M.P., Kossert, K., Nähle, O.: Activity standardization of $^{99\text{m}}\text{Tc}$ by digitizer-based $4\pi\text{ce}(\text{LS})\text{-}\gamma$ and $4\pi\text{ce}(\text{PC})\text{-}\gamma$ coincidence counting. *Applied Radiation and Isotopes* 200 (2023) 110962, <https://doi.org/10.1016/j.apradiso.2023.110962>
- [7] Riffaud, J., Kossert, K., Takács, M.P., Chiera, N.M., Schumann, D., Studer, D., Röttger, S., Wendt, K.: Determination of the activity and nuclear decay data of ^{157}Tb . *Applied Radiation and Isotopes* 211 (2024) 111407, <https://doi.org/10.1016/j.apradiso.2024.111407>
- [8] Kossert, K., Takács, M.P., Nähle, O.: Liquid scintillation counting: A valuable tool to determine half-lives. *Proceedings of the 15th International Conference on Nuclear Data for Science and Technology* (ND2022). *European Physics Journal Web of Conferences* 284 (2023) 02002, <https://doi.org/10.1051/ep-jconf/202328402002>
- [9] Takács, M.P., Kossert, K.: Half-life determination of short-lived nuclear levels in ^{237}Np (59.54 keV), ^{233}Pa (86.47 keV) and ^{227}Ac (27.37 keV). *Applied Radiation and Isotopes* 176 (2021) 109858
- [10] Kajan, I., Heinitz, S., Kossert, K., Sprung, P., Dressler, R., Schumann, D.: The first direct determination of the ^{93}Mo half-life, *Scientific Reports* 11:19788, <https://doi.org/10.1038/s41598-021-99253-5>
- [11] Kossert, K., Amelin, Y., Arnold, D., Merle, R., Mougeot, X., Schmiedel, M., Zapata, D.: Activity standardization of two enriched ^{40}K solutions for the determination of decay scheme parameters and the half-life. *Applied Radiation and Isotopes* 188 (2022) 110362, <https://doi.org/10.1016/j.apradiso.2022.110362>
- [12] Kossert, K., Veicht, M.A., Mihalcea, I., Nedjadi, Y., Schumann, D., Symochko, D.: Activity Standardization of ^{32}Si at PTB. *Applied Radiation and Isotopes* 202 (2023) 111042, <https://doi.org/10.1016/j.apradiso.2023.111042>
- [13] Kossert, K., Loidl, M., Mougeot, X., Paulsen, M., Ranitzsch, Ph., Rodrigues, M.: High precision measurement of the ^{151}Sm beta decay by means of a metallic magnetic calorimeter. *Applied Radiation and Isotopes* 185 (2022) 110237, <https://doi.org/10.1016/j.apradiso.2022.110237>
- [14] Paulsen, M., Ranitzsch, P.C.-O., Loidl, M., Rodrigues, M., Kossert, K., Mougeot, X., Singh, A., Leblond, S., Beyer, J., Bockhorn, L., Kempf, S., Wegner, M., Enss, C., Nähle, O.: High precision measurement of the ^{99}Tc β spectrum. Preprint: <https://arxiv.org/abs/2309.14014>
- [15] Webseite des EU Projektes MetroPOEM: <https://www.npl.co.uk/euramet/metropoem>
- [16] S. Röttger et.al.: Evolution of traceable radon emanation sources from MBq to few Bq, *Applied Radiation and Isotopes*, Volume 196, 110726, 2023, <https://doi.org/10.1016/j.apradiso.2023.110726>

- [17] F. Mertes et.al.: Ion implantation of ^{226}Ra for a primary ^{222}Rn emanation standard, *Applied Radiation and Isotopes* 181 (2022), <https://doi.org/10.1016/j.apradiso.2021.110093>
- [18] F. Mertes et.al.: Approximate sequential Bayesian filtering to estimate ^{222}Rn emanation from ^{226}Ra sources using spectral time series, *Journal of Sensors and Sensor Systems* 12 (2023), <https://doi.org/10.5194/jsss-12-147-2023>
- [19] M.O. Stein, H. Fleischhack, S. Röttger: Tra-Gamma - A DIGITAL SERVICE FOR VALIDATING GAMMA-RAY SPECTROMETRY ANALYSIS SOFTWARE, accepted by Measurement: Sensors, special edition IMEKO World Congress (2024)
- [20] H. Fleischhack, M.O. Stein, S. Röttger: A METROLOGICAL PERSPECTIVE ON DATA ANALYSIS METHODS IN GAMMA-RAY SPECTROMETRY, accepted by Measurement: Sensors, special edition IMEKO World Congress (2024)
- [21] Gesetz zum Schutz vor der schädlichen Wirkung ionisierender Strahlung (Strahlenschutzgesetz – StrlSchG) vom 27. Juni 2017 (BGBl. I S. 1966), zuletzt geändert durch Artikel 2b des Gesetzes vom 18. November 2020 (BGBl. I S. 2397)
- [22] Verordnung zum Schutz vor der schädlichen Wirkung ionisierender Strahlung (Strahlenschutzverordnung StrlSchV) vom 29. November 2018 (BGBl. I S. 2034, 2036), geändert durch Artikel 1 der Verordnung vom 20. November 2020 (BGBl. I S. 2502)
- [23] Bericht „Umweltradioaktivität und Strahlenbelastung - Jahresbericht 2020“, Hrsg: Bundesministerium für Umwelt, Naturschutz, nukleare Sicherheit und Verbraucherschutz (BMUV), Bonn
<http://nbn-resolving.de/urn:nbn:de:0221-2023092039261>
- [24] BMG: Trinkwasserverordnung in der Fassung der Bekanntmachung 10. März 2016. BGBl. Teil I Nr. 12: S. 459-491, 2016
- [25] Beyermann M, Hofmann P, Witter C: Leitfaden zur Untersuchung und Bewertung von radioaktiven Stoffen im Trinkwasser bei der Umsetzung der Trinkwasserverordnung. Empfehlung von BMUB, BMG, BfS, UBA, und den zuständigen Landesbehörden sowie DVGW und BDEW. Hrsg.: Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB), Bonn, 2017, <http://nbn-resolving.de/urn:nbn:de:0221-2017020114224>
- [26] Beyermann M, Bünger T, Gehrcke K, Obrikat D: Strahlenexposition durch natürliche Radionuklide im Trinkwasser in der Bundesrepublik Deutschland. BfS-SW-Bericht, BfS SW 06/09, Salzgitter, 2009, <http://nbn-resolving.de/urn:nbn:de:0221-20100319945>
- [27] Heldal, H. E., et al. (2019). Cruise report: Investigation of the marine environment around the nuclear submarine „Komsomols“ 6.-10. July 2019 (IMR cruise number 2019109). Toktrapport, Havforskningsinstituttet. 9-2019: 42
- [28] Kanisch G: Effektive ^{137}Cs -Halbwertszeiten in Fischen aus Binnenseen und Fließgewässern und ^{137}Cs -Sorptionsverhalten in Böden. In: Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (eds.): Umweltradioaktivität in der Bundesrepublik Deutschland 2004 und 2005 - Daten und Bewertung. Bericht der Leitstellen des Bundes und des Bundesamtes für Strahlenschutz, Kap. 14: 74-80, 2007
- [29] Dahlgård H: Transfer of European coastal pollution to the arctic: Radioactive tracers. *Marine Pollution Bulletin* 31/1-3: 3-7, 1995
- [30] Aarkrog A: Input of anthropogenic radionuclides into the World Ocean. *Deep Sea Research Part II: Topical Studies in Oceanography* 50/17-21, 2597-2606, 2003
- [31] Hunt J, Leonard K, Hughes L: Artificial radionuclides in the Irish Sea from Sellafield: remobilisation revisited. *Journal of Radiological Protection* 33/2: 261-279, 2013
- [32] Nielsen SP, Lüning M, Illus E, Outola I, Ikäheimonen T, Mattila J, Herrmann J, Kanisch G, Osvath I: Baltic Sea. In: Atwood D: *Radionuclides in the Environment*. John Wiley & Sons, 2010
- [33] HELCOM: Thematic assessment of radioactive substances in the Baltic Sea 2011-2015. *Baltic Sea Environmental Proceedings* 151, 2018
- [34] Steele AK: Derived concentration factors for caesium-137 in edible species of North Sea fish. *Marine Pollution Bulletin* 21/12: 591-594, 1990
- [35] International Atomic Energy Agency (IAEA): Sediment distribution coefficients and concentration factors for biota in the marine environment. Technical Report Series No. 422, Wien, 103 Seiten, 2004
Verfügbar Online: <http://www-pub.iaea.org/books/IAEABooks/6855/Sediment-Distribution>

- [on-Coefficients-and-Concentration-Factors-for-Biota-in-the-Marine-Environment](#); zuletzt abgerufen: 28.11.2022
- [36] HELCOM (2023) Radioactive substances: Caesium-137 in fish and surface seawater. HELCOM core indicator report. Online. <https://indicators.helcom.fi/indicator/radioactive-substances/>, Stand 18.01.2024, ISSN 2343-2543
- [37] Kanisch G, Nagel G, Krüger A, Kellermann HJ: Radiological implications from the temporal development of radioactivity in marine food from the North Sea. *Kerntechnik* 65: 183-189, 2000
- [38] Galeriu D und Melintescu A: Tritium. In: Atwood D.A., Radionuclides in the Environment, S. 47-63, 2010
- [39] Povinec PP, Kwong LW, Kaizer J, Molnár M, Nies H, Palcsu L, Papp L, Pham MK and Jean-Baptist P: Impact of the Fukushima accident on tritium, radiocarbon and radiocesium levels in seawater of the western North Pacific Ocean: A comparison with pre-Fukushima situation, 2017
- [40] The Subcommittee on Handling of the ALPS Treated Water (SHALPS): The Subcommittee on Handling of the ALPS Treated Water - Report, 2020
Online: https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/20200210_alps.pdf; zuletzt abgerufen: 04.03.2024
- Nogueira P, Zankl M, Schlattl H, Vaz P: Dose conversion coefficients for monoenergetic electrons incident on a realistic human eye model with different lens cell populations. *Phys Med Biol* 56: 6919-6934, 2011
- [41] International Atomic Energy Agency (IAEA) : IAEA Follow-up Review of Progress Made on Management of ALPS Treated Water and the Report of the Subcommittee on Handling of ALPS treated water at TEPCO's Fukushima Daiichi Nuclear Power Station, 2020
Online: <https://www.iaea.org/sites/default/files/20/04/review-report-020420.pdf>; zuletzt abgerufen: 28.11.2022
- [42] International Atomic Energy Agency (IAEA): IAEA Review of Safety Related Aspects of Handling ALPS-Treated Water at TEPCO's Fukushima Daiichi Nuclear Power Station - Report 1: Review Mission to TEPCO and METI (February 2022), 2022
Online: https://www.iaea.org/sites/default/files/report_1_review_mission_to_tepco_and_meti.pdf; zuletzt abgerufen: 04.03.2024
- [43] European Commission: Emerging Issues on Tritium and Low Energy Beta Emitters. Radiation Protection No. 152, Proceedings of the EU Scientific Seminar 2007. 108 Seiten, 2008
- [44] Health Protection Agency: Review on risks from Tritium, „Report of the independent Advisory Group on Ionising Radiation“, Documents of the Health Protection Agency, Radiation, Chemical and Environmental Hazards (November 2007), 104 Seiten, 2007
- [45] Behrens E, Schwarzkopf FU, Lübbecke, JF, Böning CW: Model simulations on the long-term dispersal of ¹³⁷Cs released into the Pacific Ocean off Fukushima. *Environmental Research Letters* 2012 Vol. 7 Issue 3 Pages 034004, 2012
- [46] International Atomic Energy Agency (IAEA): IAEA Marine Radioactivity Information System (IAEA MARIS). In: Division of IAEA Environment Laboratories [online]. Monaco, 2024
<https://maris.iaea.org>; Zugriff am 22.01.2024
- [47] Buesseler KO: Opening the floodgates at Fukushima. *Science* Vol. 369 Issue 6504 Pages 621-622, 2020
- [48] Internationale Atomenergiebehörde (IAEA): DE MINIMIS CONCEPTS IN RADIOACTIVE WASTE DISPOSAL. Considerations in Defining de Minimis Quantities of Solid Radioactive Waste for Uncontrolled Disposal by Incineration and Landfill. IAEA TECDOC 282, Vienna, 1983
https://inis.iaea.org/collection/NCLCollectionStore/_Public/15/028/15028861.pdf?r=1&r=1