UNIVERSITAS
GADJAH MADA
Estimasi Pembangkitan Limbah Radioaktif Struktur Beton Reaktor Serba Guna G.A. Siwabessy Hasil Aktivasi Neutron Menggunakan PHITS
Agus Dwi Purnomo, Dr. Dwi Satya Palupi, S.Si., M.Si.; Dr.Eng. Anggoro Septilarso, S.T., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Abdullah, M.A.H., Rashid, R.S.M., Amran, M., Hejazii, F., Azreen, N.M., Fediuk, R., Voo, Y.L., Vatin, N.I., dan Idris, M.I., 2022, Recent Trends in Advanced Radiation Shielding Concrete for Construction of Facilities: Materials and Properties, *Polymers*, 14, 2830.

Abuhoza, A.A., Kassim, H.A., Alghamdi, A.A., Alrumayan, F.M., Arib, M., Aljammaz, I.J., dan ALQahtani, M., 2022, Identification of Activation Isotopes in a CS-30 Cyclotron Vault, *Sensors*, 22, 2581.

Ahmad, N., Idris, M.I., Hussin, A., Karim, J.A., Azreen, N.M., dan Zainon, R., 2024, Enhancing Shielding Efficiency of Ordinary and Barite Concrete in Radiation Shielding Utilizations, *Scientific Reports*, 14, 26029.

Ahmad, N., Idrisa, M.I., Amranb, M., Hussind, A., Karime, J.A., Masenwate, N., Raizal S. M., Rashid, R.S.M., dan Yahya, M.S., 2025, Radiation Induced Damage to Concrete Biological Shielding Materials: A State of the Art Review, *Jurnal Kejuruteraan*, 37, 1, 97-135.

Ardani, 2011, Analisis Dosis Gamma RSG-GAS dengan Teras Silisida Kerapatan 4,8 gU/cm^3 Menggunakan MCNP, *J. Iptek Nuklir Ganendra*, 14, 2, 65-75.

Aziz, M.Z.A., Yanib, S., Haryantoc, F., Alid, N.K.Y., Tajudin, S.M., Iwase, H., and Musarudinh, M., 2020, Monte Carlo Simulation of X-ray Room Shielding in Diagnostic Radiology Using PHITS Code, *J. Radiat. Res. Appl. Sci.*, 13, 1,704-713.

Bakhtiari, M., Oranj, L.M., Jung, N., Lee, A., dan Lee, H., 2020, Study on Concrete Activation Reduction in a PET Cyclotron Vault, *J. Radiat. Prot. Res.,* 45, 3,130–141.

BATAN, 1997-2021, *Laporan Operasi Reaktor Serba Guna G.A. Siwabessy*, Badan Tenaga Nuklir Nasional, Jakarta, Indonesia.

BATAN, 2018, *Laporan Analisis Keselamatan Reaktor Serba Guna G.A. Siwabessy Revisi 11*, Badan Tenaga Nuklir Nasional, Jakarta, Indonesia.

BRIN, 2022-2025, *Laporan Operasi Reaktor Serba Guna G.A. Siwabessy,* Badan Riset dan Inovasi Nasional, Indonesia.

UNIVERSITAS
GADJAH MADA
Estimasi Pembangkitan Limbah Radioaktif Struktur Beton Reaktor Serba Guna G.A. Siwabessy Hasil Aktivasi Neutron Menggunakan PHITS
Agus Dwi Purnomo, Dr. Dwi Satya Palupi, S.Si., M.Si.; Dr.Eng. Anggoro Septilarso, S.T., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Bruck, P.M., Esselmana, T.C., Elaidia, B.M., Wallb, J.J., dan Wong, E.L., 2019, Structural Assessment of Radiation Damage in Light Water Power Reactor Concrete Biological Shield Walls, *Nucl. Eng. Des.*, 350, 9-20.

Cetina, I., 2024, Nuclear Waste Management: Recycling and Long-term Safe Storage, *J. Chem. Chem. Eng.*, 73, 5-6, 249-261.

Chae S., Park, S., Park, J., Min, S., Kim, J., dan Lee1, J., 2020, An External Dose Assessment of Worker During RadWaste Treatment Facility Decommissioning, *J. Radiat. Prot. Res.*, 45, 2, 81-87.

Crozet, M., Demeyer, S., Lourenco, V., Herranz, M., dan Boden, S., 2022, Analysis of the Comparison of In Situ Measurements Made on Biological Shielding of the BR3 Nuclear Reactor, *J. Radioanal. Nucl. Chem*., 331, 2967-2982.

Cruz, J.R.P., Astronomo, A.A., Santos, G.N., dan Olivares, R.U., 2024, A PHITS Based-Computational Model of a TRIGA-Fueled Subcritical Reactor for Gamma Dose Mapping, *Nucl. Eng. Technol.*, 56, 5339-5345.

DIN, 1991, *Testing of Hardned Concrete*, DIN 1048 Part 5, German Standards. DIN-Normen, Beuth Verlag GmbH, Berlin, German.

DIN, 2013, *Classification of shielding concretes by proportion of elements – Part 1: Neutron Shielding*, DIN-25413-1:2013-04, Deutsches Institut für Normung, Germany.

Director General IAEA, 2023, *Nuclear Technology Review 2023*, GC(67)/INF/4, IAEA, Vienna, Austria.

Done, L., Ionescu, E., Gurau, D., Carmela, A., dan Mincu, M., 2021, Management of the Concrete and Cast Iron Waste Resulted from the Decommissioning of the VVR-S Nuclear Research Reactor Block from IFIN-HH, *Book of Abstracts of International Conference on Radioactive Waste Management: Solutions for a Sustainable Future*, 1-5 November 2021, Vienna, Austria, 30.

Fadli, O.E., Suparmi, Khakim, A., Suharyana, dan Riyatun, 2019, Power and Neutron Flux Distribution Analysis in the RSG-GAS Reactor: Preliminary Study to Identify the Reactor Readiness as Power Ramp Test Facility (PRTF), *J. Phys.: Conf. Ser*., 1153, 012111.

UNIVERSITAS
GADJAH MADA
Estimasi Pembangkitan Limbah Radioaktif Struktur Beton Reaktor Serba Guna G.A. Siwabessy Hasil Aktivasi Neutron Menggunakan PHITS
Agus Dwi Purnomo, Dr. Dwi Satya Palupi, S.Si., M.Si.; Dr.Eng. Anggoro Septilarso, S.T., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Gonzalez, M.T., Mantero, J., Hurtado, S., Ales, V.F., Alejandre, F.J., dan Ochoa, J.M.A., 2022, Characterization and Radioactive Evaluation of the Concrete from a Radiotherapy Bunker Structural Concrete, 23, 3102-3113.

Hajdu, D., Dian, E.. Klinkby, E.B., Jensen, C.C.P.; Osan, J., dan Zagyvai, P., 2019, Neutron Activation Properties of PE-B4C-Concrete Assessed by Measurements and Simulations, *J. Neutron Res.*, 2, 87-94.

Hakim, A.A.R., Rosmayani, L., dan Abdullah Nur Aziz, A.N., 2022, Analisis Perhitungan Pembangkitan Panas Target Lu_2O_3 di Teras Reaktor RSG-GAS Menggunakan Program GENGTC, *Buletin Pengelolaan Reaktor Nuklir*, 19, 2, 42-49

Hamzah, A., Adrial, H., dan Subiharto, 2018, Evaluation of Radiation Dose Rate of RSG-GAS Reactor, *Jurnal Ilmiah Daur Bahan Nuklir*, 24, 3, 177-186.

Harsanyi, I., Horvath, A., Kis, Z., Gmeling, K., Niedzwiedzka, D.J., Glinicki, M.A., dan Szentmiklosi, L., 2023, Assessment of Neutron-Induced Activation of Irradiated Samples in a Research Reactor, *Nucl. Eng. Technol.*, 55, 3, 1036-1044.

Hong, S. dan Um, W., 2023, Decontamination of Neutron-Activated Radioactive concrete waste by separating Eu, Co, Fe, and Mn-containing sand particles Using Dense Medium Separation, *J. Hazard. Mater.*, 443, 130183.

Humas BRIN, 2024, 37 Tahun Beroperasi, Begini Kondisireaktor Serba Guna G.A. Siwabessy, *https://brin.go.id/news/120626/37-tahun-beroperasi-begini-kondisi-reaktor-serba-guna-ga-siwabessy*, diakses 14 Agustus 2025.

Humas BRIN, 2024, Pentingnya Karakterisasi Dekomisioning dalam Revitalisasi Fasilitas Nuklir, *https://www.brin.go.id/news/117919/pentingnya-karakterisasi-dekomisioning-dalam-revitalisasi-fasilitas-nuklir*, diakses 13 Agustus 2025.

IAEA, 2016, *Predisposal Management of Radioactive Waste from Nuclear Power Plants and Research Reactors*, Safety Standards Series No. SSG-40, IAEA, Vienna, Austria.

IAEA, 2016, *Research Reactors: Purpose and Future*, Pages 2-10 in 60 Years Atom for Peace and Development, IAEA, Vienna, Austria.

UNIVERSITAS
GADJAH MADA
Estimasi Pembangkitan Limbah Radioaktif Struktur Beton Reaktor Serba Guna G.A. Siwabessy Hasil Aktivasi Neutron Menggunakan PHITS
Agus Dwi Purnomo, Dr. Dwi Satya Palupi, S.Si., M.Si.; Dr.Eng. Anggoro Septilarso, S.T., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

IAEA, 2018, *Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities*, Safety Standards, No. SSG-47, IAEA, Vienna, Austria.

IAEA, 2023, *Radiation Protection and Radioactive Waste Management in the Design and Operation of Research Reactors*, Safety Standards Series No. SSG-85, IAEA, Vienna, Austria.

IAEA, 2024, *Considerations on Decommissioning in the Design and Operation of Research Reactors*, Technical Reports Series No. 494, IAEA, Vienna, Austria.

IAEA, 1964, *Reactor Shielding*, Technical Reports Series No. 34, IAEA, Vienna, Austria.

IAEA, 1998, *Radiological Characterization of Shut Down Nuclear Reactors for Decommissioning Purposes*, Technical Reports Series No. 389, IAEA, Vienna, Austria.

IAEA, 2003, *Manual for Reactor Produced Radioisotopes*, TECDOC No. 1340, IAEA, Vienna, Austria.

IAEA, 2004, *Management of Waste Containing Tritium and Carbon-14*, Technical Reports Series No. 421, IAEA, Vienna, Austria.

IAEA, 2008, *Decommissioning of Research Reactors and Other Small Facilities by Making Optimal Use of Available Resources*, Technical Reports Series No. 463, IAEA, Vienna, Austria.

IAEA, 2008, *Managing Low Radioactivity Material from The Decommissioning of Nuclear Facilities*, Technical Reports Series No. 462, IAEA, Vienna, Austria.

IAEA, 2008, *Safety Assessment for the Decommissioning of Facilities Using Radioactive Material*, Safety Standards Series No. WS-G-5.2., IAEA, Vienna, Austria.

IAEA, 2013, *Cost Estimation for Research Reactor Decommissioning,* Nuclear Energy Series No. NW-T-2.4., IAEA, Vienna, Austria.

IAEA, 2014, *Decommissioning of Facilities*, Safety Standards Series, No. GSR Part 6, IAEA, Vienna, Austria.

UNIVERSITAS
GADJAH MADA
Estimasi Pembangkitan Limbah Radioaktif Struktur Beton Reaktor Serba Guna G.A. Siwabessy Hasil Aktivasi Neutron Menggunakan PHITS
Agus Dwi Purnomo, Dr. Dwi Satya Palupi, S.Si., M.Si.; Dr.Eng. Anggoro Septilarso, S.T., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

IAEA, 2014, *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards*, Safety Standards Series No. GSR Part 3, IAEA, Vienna, Austria.

IAEA, 2018, *Classification of Radioactive Waste*, Safety Standards Series No. GSG-1, IAEA, Vienna, Austria.

INFCE, 1980, Advanced Fuel Cycle and Reactor Concepts, *Report of INFCE Working Group 8*, IAEA, Vienna, Austria, 19.

JAEA, 2024, PHITS, *https://phits.jaea.go.jp/*, diakses 6 Agustus 2025.

Kara, A. dan Mammadzada, E., 2023, Monte Carlo Simulations for Targeted Beta Therapy: An Optimization for Liver Lesions and Comparison of Dose Distributions Iin Other Organs, *Radiat. Med. Prot.,* 4, 244-252.

Kenya, 2019, *Act No. 29 Year 2019 on Radioactive Waste Management*, Kenya Nuclear Regulatory.

Kim, C., Choi, S., dan Shin, M., 2018, Review-Electro-Kinetic Decontamination of Radioactive Concrete Waste from Nuclear Power Plants, *J. Electrochem. Soc.*, 165, 9, 330-344.

Kim, H.K., Shin, S.H., Kong, C.S., dan Kim, C.L., 2024, Evaluation of Worker Radiation Exposure During the Kori Unit 1 Steam Generator Dismantling Process, *Sci. Technol. Nucl. Install.*, 2024,7.

Kim, S., Tae Young Kong, T.Y., Jinho Son, J., Song, C., Kim, J., Park, J., Kim, H.G, 2024, Proposal of Database of Radiological Characterization for Decommissioning Nuclear Power Plants, *Energy Sci. Eng.*, 12, 3589-3598.

Knoll, G.F., 2010, *Radiation Detection and Measurement*, ed. 4, United States of America, 767-771.

Krane, K.S., 1987*, Introductory Nuclear Physics*, Oregon State University, United States of America, 378-465.

Kuntoro, I. Suparlina, L., dan Purwadi, 2022, The Assessment of the Safety Operation of RSG-GAS Reactor for Radioisotope Target Irradiation, *J. Teknol. Reaktor Nukl.*, 24, 2, 85-92.

Lakshminarayana, G., Issa, S.A.M., Saddeek, Y.B., Tekin, H.O. Al-Buriahi, M.S., Dong, M.G., Lee, D., Jonghun Yoon, J., dan Taejoon Park, T., 2021,

UNIVERSITAS
GADJAH MADA
Estimasi Pembangkitan Limbah Radioaktif Struktur Beton Reaktor Serba Guna G.A. Siwabessy Hasil Aktivasi Neutron Menggunakan PHITS
Agus Dwi Purnomo, Dr. Dwi Satya Palupi, S.Si., M.Si.; Dr.Eng. Anggoro Septilarso, S.T., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Analysis of Physical and Mechanical Traits and Nuclear Radiation Transmission Aspects of Gallium(III) Trioxide Constituting Bi_2O_3-B_2O_3 Glasses, *Results Phys.*, 30, 104899.

Leskinen, A., Paatero, S.S., Leporanta, J., Hytonen, N., Goget, M.B., dan Raty, A., 2024, Sampling, Characterization, Method Validation, and lessonslearned in Analysis of Highly Activated Stainless Steel from Reactor Decommissioning, *J. Radioanal. Nucl. Chem.*, 333, 145-163.

Liou, J. dan Tang, X, 2023, What are Research Reactors? How do they Contribute to Sustainable Development?, *Bulletin of Research Reactors*, IAEA, Vienna, Austria, 4-5.

Moon, H., Mirmotalebi, S., Jang, Y., Ahn, Y., dan Kwon, N., 2024, Risk Evaluation of Radioactive Concrete Structure Decommissioning in Nuclear Power Plants Using Fuzzy-AHP, *Buildings*, 14, 1536.

Nababan, N., 2008, Decommissioning Plan for Research Reactors in Indonesia, *The IAEA 3rd Technical Meeting on the Research Reactor Decommissioning Demonstration Project (R2D2P)*, 15-19 September 2008, Manila, Philippines.

NEA, 2020, Optimising Management of Low-level Radioactive Materials and Waste from Decommissioning. *Radioactive Waste Management and Decommissioning*, NEA No. 7425, Boulogne-Billancourt, France, 19-83.

NEA, 2023, PHITS-3.X., NEA-1931/01, *https://www.oecd-nea.org/tools/abstract/detail/nea-1931*, diakses 15 Agustus 2025.

NEA, 2023, Radiological Characterisation for Decommissioning of Nuclear Installations. *Report of the Task Group on Radiological Characterisation and Decommissioning (RCD) of the Working Party on Decommissioning and Dismantling (WPDD)*, Radioactive Waste Management, NEA/RWM/WPDD(2013)2, 13-24.

Niedzwiedzka, D.J., Gmeling, K., Aneta Antolik, A., Dziedzic, K., dan Glinicki, M.A., 2021, Assessment of Long Lived Isotopes in Alkali-Silica Resistant Concrete Designed for Nuclear Installations, *Materials*, 14, 6, 4595.

Oh, J., Lee, H., Park, S., Kim, M., Hong, S., Ko, S., dan Cho, W., 2011,

UNIVERSITAS
GADJAH MADA
Estimasi Pembangkitan Limbah Radioaktif Struktur Beton Reaktor Serba Guna G.A. Siwabessy Hasil Aktivasi Neutron Menggunakan PHITS
Agus Dwi Purnomo, Dr. Dwi Satya Palupi, S.Si., M.Si.; Dr.Eng. Anggoro Septilarso, S.T., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Comparison of the FLUKA, MCNPX, and PHITS Codes in Yield Calculation of Secondary Particles Produced by Intermediate Energy Proton Beam, *Prog. Nucl. Sci. Technol.*, 1, 85-88.

Oh, M., Lee, K., Foster, R.I., dan Lee, C., 2021, Feasibility Study on the Volume Reduction of Radioactive Concrete Wastes Using Thermomechanical and Chemical Sequential Process, *J. Environ. Chem. Eng.*, 9, 105742.

Onaizi, A.M., Amran, M., Tang, W., Betoush, N., Alhassan, M., Rashid, R.S,M., Yasin, M.F., Bayagoob, K.H., dan Onaizi, S,A., 2024, Radiation-Shielding Concrete: a Review of Materials, Performance, Aand the Impact of Radiation on Concrete Properties, *J. Build. Eng.*, 97, 15, 110800.

Panggabean, J.H., Rajagukguk, S.P., and Surbakti, T., 2022, Analisis Koefisien Reaktivitas Teras RSG-GAS pada Kondisi *Hot Full Power* (HFP), *Buletin Pengelolaan Reaktor Nuklir*, 19, 1, 43-54.

Pardi dan Purwadi, 2020, Analisis Nilai Reaktivitas Batang Kendali Teras RSG-GAS Setelah 30 Tahun Beroperasi, *Sigma Epsilon*, 24, 1.

Peraturan Badan Pengawas Tenaga Nuklir No. 4 Tahun 2009, *Tentang Dekomisioning Reaktor Nuklir*, Badan Pengawas Tenaga Nuklir, Jakarta, Indonesia.

Peraturan Badan Pengawas Tenaga Nuklir No. 8 Tahun 2016, *Tentang Pengolahan Limbah Radioaktif Tingkat Rendah dan Tingkat Sedang*, Badan Pengawas Tenaga Nuklir, Jakarta, Indonesia.

Peraturan Badan Pengawas Tenaga Nuklir Nomor 4 Tahun 2013, *Tentang Proteksi dan Keselamatan Radiasi Dalam Pemanfaatan Tenaga Nuklir*, Badan Pengawas Tenaga Nuklir, Jakarta, Indonesia.

Peraturan Pemerintah Republik Indonesia Nomor 61 Tahun 2013, *Tentang Pengelolaan Limbah Radioaktif*, Badan Pengawas Tenaga Nuklir, Jakarta, Indonesia.

PHITS Development Team, 2024, *Features of PHITS3.34*, JAEA, Japan.

Pinem, S., Liem, P.H., Susanti, F., Sigit, S. Nurtanto, B.D., Akhmadi, S.F., dan Luthfi, W., 2025, Review on the Fuel Management Strategy of the RSG-GAS Equilibrium Core, *Ann. Nucl. Energ*, 213, 111180.

UNIVERSITAS
GADJAH MADA
Estimasi Pembangkitan Limbah Radioaktif Struktur Beton Reaktor Serba Guna G.A. Siwabessy Hasil Aktivasi Neutron Menggunakan PHITS
Agus Dwi Purnomo, Dr. Dwi Satya Palupi, S.Si., M.Si.; Dr.Eng. Anggoro Septilarso, S.T., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Poenitz, E., Gutzmer, Q.I.R., Astrid Barkleit, A., dan Konheiser, J., 2024, Activity Measurements and Calculations for Gamma-Emitting Radionuclides in Concrete Drill Cores of Unit 2 of the Greifswald NPP, *EPJ Web Conf.,* 308, 03005.

Pramono, E.Y. dan Yusman, W.M., 2024, Dampak Limbah Radioaktif Terhadap Lingkungan dan Upaya Mitigasi Risikonya, *Prosiding Seminar Nasional Teknik Lingkungan Kebumian (SATU BUMI) Ke-VI*, 16 November 2024, UPN Veteran, Yogyakarta, Indonesia.

Putri, J.E. dan Kim, J., 2025, Monte Carlo Optimization of Concrete-Plugged and Sand-Filled Shielding Configurations for Fission Product Molybdenum Capsules at Underground Storage Facility, *J. Radiat. Res. Appl. Sc.*, 18,101759.

Raja, P.M.V. dan Barron. A.R., 2019, *Physical Methods in Chemistry and Nano Science*, Rice University, Houston, Texas, 63-71.

Ratliff, H.N., Matsuda, N., Abe, S., Miura, T., Furuta, T., Iwamoto, Y., dan Sato, T., 2020, Modernization of the DCHAIN-PHITS Activation Code With New Features and Updated Data Libraries, *Methods Phys. Res. B NIMB*, 484, 29-41.

Ridwan, Ikram, A., dan Wuryanto, 2000, Current Status of Neutron Scattering Research and Accelerator Technology in Indonesia. *Proceeding 15th Meeting of the International Collaboration on Advanced Neutron Sources*, 6-9 November 2000, Epocal Tsukuba International Congress Center, Tsukuba, Japan, 121-130.

Riskiana, D.N., Effendi, M., Sunardi, A., Imron, M., dan Abdul Aziz Rohman Hakim, A.A.R., 2021, Perhitungan Produksi Lu-177 Berdasarkan Variasi Waktu Iradiasi di Reaktor RSG-GAS Menggunakan Program Origen 2.1, *Buletin Pengelolaan Reaktor Nuklir*, 18, 1, 27-39.

Sato, T. Iwamoto, Y., Hashimoto, S., Ogawa, T., Furuta, T., Abe, S., Takeshi Kai1, Matsuya, Y., Matsuda, N., Hirata, Y., Sekikawa, T., Yao, L., Tsai, P., Ratliff, H., Iwase, H., Sakaki, Y., Sugihara, K., Shigyo, N., Sihver, L., dan Koji Niita, K., 2024, *PHITS User's Manual Ver. 3.34*, JAEA, Japan.

UNIVERSITAS
GADJAH MADA
Estimasi Pembangkitan Limbah Radioaktif Struktur Beton Reaktor Serba Guna G.A. Siwabessy Hasil Aktivasi Neutron Menggunakan PHITS
Agus Dwi Purnomo, Dr. Dwi Satya Palupi, S.Si., M.Si.; Dr.Eng. Anggoro Septilarso, S.T., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Sato, T., Niita, K., Matsuda, N., Hashimoto, S., Iwamoto, Y., Noda, S., Ogawa, T., Iwase, H., Nakashima, H., Fukahori, T., Okumura, K., Kai, T., Chiba, S., Furuta, T., dan Sihver, L., 2013, Particle and Heavy Ion Transport code System, PHITS, version 2.52, *J. Nucl. Sci. Technol.*, 50, 9, 913-923.

Septilarso, A., Kawasaki, D., dan Yanagihara, S., 2019, Radioactive waste Inventory Estimation of A Research Reactor for Decommissioning Scenario Development, *J. Nucl. Sci. Technol.*, 57, 3, 7-9.

Shabani, Rangaiah, D.S.T., Langer, C., Mauerhofer, E., · Paul Zakalek, P., dan Gutberlet, T., 2025, Benchmarking of the PHITS Simulation Code Using Neutron Activation Experiments for Reliable Calculations of Neutron Fields, *J. Radioanal. Nucl. Chem.*, 334, 2981-2989.

Shibata, K., 2011, JENDL-4.0: A New Library for Nuclear Science and Engineering, *J. Nucl. Sci. Technol.*, 48, 1, 1-30.

Sukmana, J., Imron, M., Permadi, M.G., dan Faturohmi, N., 2020, Investigasi terhadap Nilai Reaktivitas Batang Kendali Reaktor RSG-GAS antara Hasil Perhitungan dengan Hasil Eksperimen, *Jurnal Iptek Nuklir Ganendra Ganendra*, 23, 2, 77-88.

Suparmi, A., Setyaningsih, T.D., Suharyana, Anwar, F., dan Riyatun., 2019, Perhitungan Perubahan Reaktivitas Pada Reaktor Serba Guna G.A. Siwabessy Akibat Pengoperasian Power Ramp Test Facility, *Prosiding SNFA (Seminar Nasional Fisika dan Aplikasinya)*, Universitas Sebelas Maret, Surakarta, Jawa Tengah, Indonesia, 156–161

Surbakti, T. dan Imron, M., 2017, Fuel Burn-Up Calculation for Working Core of the RSG-GAS Research Reactor at BATAN Serpong, *Jurnal Penelitian Fisika dan Aplikasinya (JPFA),* 7, 2.

Surbakti, T. dan Purwadi, 2019, Analysis of Neutronic Safety Parameters of the Multi-Purpose Reactor-Gerrit Augustinus Siwabessy (RSG-GAS) Research Reactor at Serpong, *Jurnal Penelitian Fisika dan Aplikasinya (JPFA)*, 9, 1.

Surbaktia, T., Pinema, S., Luthfia, W., dan Hartantob, D., 2022, Core Burn-Up Analysis of the RSG-GAS Research Reactor Using Deterministic and

UNIVERSITAS
GADJAH MADA
Estimasi Pembangkitan Limbah Radioaktif Struktur Beton Reaktor Serba Guna G.A. Siwabessy Hasil Aktivasi Neutron Menggunakan PHITS
Agus Dwi Purnomo, Dr. Dwi Satya Palupi, S.Si., M.Si.; Dr.Eng. Anggoro Septilarso, S.T., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Stochastic Methods, *Jurnal Teknologi*, 84, 5, 191-198.

Susanti, F. dan Effendy, N., 2022, Penentuan Posisi Iradiasi Batu Topaz Ddengan Kapsul dan Pengarah Boron Karbida (B4C) pada Grid Berilium Reaktor RSG-GAS Menggunakan Program Batan 2-DIFF. *Buletin Pengelolaan Reaktor Nuklir.* 19, 2, 1-13.

Theis C., Buchegger K.H., Brugger M., Forkel-Wirth D., Roesler S., dan Vincke H., 2006, Interactive Three Dimensional Visualization and Creation of Geometries for Monte Carlo Calculations", *Nucl. Instrum. Methods Phys. Res. A*, 562, 827-829.

Theis, C. dan Buchegger, K. H., 2011, SimpleGeo Solid Modeler-4.3 Manual. CERN, *https://theis.web.cern.ch/simplegeo/manual/manual2.html*, diakses 14 Agustus 2025.

Theis, C., 2009, *Basic Steps with SimpleGeo*, CERN, *https://theis.web.cern.ch/simplegeo/start.html*, diakses 14 Agustus 2025.

Theis, C., 2009, SimpleGeo Description, CERN, *https://theis.web.cern.ch/simplegeo/start.html*, diakses 14 Agustus 2025.

Theis, C., Buchegger, K.H., Feldbaumer, E., Wirth, D.F., Jaegerhofer, L., Roesler, S., dan Helmut Vincke, A.H., 2011, SimpleGeo -New Developments in the Interactive Creation and Debugging of Geometries for Monte Carlo Simulations, *Prog. Nucl. Sci. Technol.*, 2, 587-590.

Tochaikul, G., Phattanasub, A., Khemkham, P., Saengthamthawee, K., Danthanavat, N., dan Moonkum, N., 2022, Radioactive Waste Treatment Technology: A Review. *Kerntechnik*, 87, 2, 208-225.

Trnkova, L., Trojek, T., dan Thinova, L., 2010, Gamma Spectrometric Measurements of Depth-Related Radionuclide Distribution in Walls, *Appl. Radiat. Isot.,* 68, 4-5, 832-5.

Tuerlinckx, R., Huys, T., dan Esbensen, K.H., 2022, Representative Sampling and Radiological Characterization of Heterogeneous Legacy Waste, *WM2022 Conference*, 6-10 Maret 2022, Phoenix, Arizona, USA, 22031.

Tursinah, R., Permana, S., dan Ilham, P.Y., 2021, Characterization of Neutron and Gamma Beams at the Tangential Beam Port of TRIGA 2000 Reactor Using

UNIVERSITAS
GADJAH MADA
Estimasi Pembangkitan Limbah Radioaktif Struktur Beton Reaktor Serba Guna G.A. Siwabessy Hasil Aktivasi Neutron Menggunakan PHITS
Agus Dwi Purnomo, Dr. Dwi Satya Palupi, S.Si., M.Si.; Dr.Eng. Anggoro Septilarso, S.T., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Monte Carlo Methods, *J. Phys.: Conf. Ser.*, 1772, 012024.

Tursinah, R., Su'ud, Z., dan Permana, S., 2022, Neutron Beam Characterization on the Beam Tubes of 30 MW G.A. Siwabessy Reactor Using Monte Carlo, *J. Phys.: Conf. Ser.*, 2328, 012001.

USNRC, 2021, Glossary, *https://www.nrc.gov/reading-rm/basic-ref/glossary/biological-shield.html*, diakses 16 Agustus 2025.

Wikipedia, 2025, Carbon-14, *https://en.wikipedia.org/wiki/Carbon-14*, diakses 13 Desember 2025.

WNA, 2019, *Methodology to Manage Material and Waste from Nuclear Decommissioning*, World Nuclear Association, England, *3-13.*

Yang, Z., Tsai, P., Lee, S., Liu, Y., Chen, C., Sato, T., dan Sheu, R., 2017, Inter-comparison of Dose Distributions Calculated by FLUKA, GEANT4, MCNP, and PHITS for Proton Therapy, *EPJ Web Conf.*, 153, 04011.

Yin, Y. Xuan Wang, X., Kong, X., Zhang, W., Wang, Y., Mao, Y., Wang, J., Jia, T., Tu, Y., Zhang, B., dan Liang Sun, L., 2022, Physical Dosimetric Reconstruction of A Case of Large Area Back Skin Injury Due to Overexposure in An Interventional Procedure, *Radiat. Med. Prot.*, 3, 3-8.

Zagar, T., dan Ravnik, M., 2000, Measurement of Neutron Activation in Concrete Samples, *International Conference Nuclear Energy in Central Europe 2000*, 11-14 September 2000, Golf Hotel, Bled, Slovenia.