

## Основные публикации:

Список высокоцитируемых публикаций 2015 – 2025 гг., подготовленных сотрудниками отдела по тематике выполняемых исследований и практических работ:

- Degteva MO, Shagina NB, Shishkina EA, Vozilova AV, Volchkova AY, Vorobiova MI, Wieser A, Fattibene P, Della Monaca S, Ainsbury E, Moquet J, Anspaugh LR, Napier BA. Analysis of EPR and FISH studies of radiation doses in persons who lived in the upper reaches of the Techa River. *Radiat Environ Biophys* 54:433-444; 2015.
- Ivanov DV, Shishkina EA, Osipov DI, Razumeev DA, Pryakhin EA. Internal in vitro dosimetry for fish using hydroxyapatite-based EPR detectors. *Radiat Environ Biophys* 54(3):257-263; 2015.
- Maynard MR, Shagina NB, Tolstykh EI, Degteva MO, Fell TP, Bolch WE. Fetal organ dosimetry for the Techa River and Ozyorsk offspring cohorts: Part 1. A Urals-based series of fetal computational phantoms. *Radiat Environ Biophys* 54(1):37-46; 2015.
- Maynard MR, Shagina NB, Tolstykh EI, Degteva MO, Fell TP, Bolch WE. Fetal organ dosimetry for the Techa River and Ozyorsk offspring cohorts, Part 2: radionuclide S values for fetal self-dose and maternal cross-dose. *Radiat Environ Biophys* 54(1):47-59; 2015.
- Shagina NB, Tolstykh EI, Degteva MO, Anspaugh LR, Napier BA. Age and gender specific biokinetic model for strontium in humans. *J Radiol Prot* 35(1):87-127; 2015.
- Shagina NB, Fell TP, Tolstykh EI, Harrison JD, Degteva MO. Strontium biokinetic model for the pregnant woman and fetus: application to Techa River studies. *J Radiol Prot* 35:659-676; 2015.
- Shagina NB, Tolstykh TI, Fell TP, Smith TJ, Harrison JD, Degteva MO. Strontium biokinetic model for the lactating woman and transfer to breast milk: application to Techa River studies. *J Radiol Prot* 35:677-694; 2015.
- Degteva MO, Shagina NB, Vorobiova MI, Shishkina EA, Tolstykh EI, Akleyev AV. Contemporary understanding of Radioactive Contamination of the Techa River in 1949-1956. *Radiat Biol Radioecol* 56: 523-534; 2016 (in Russian).
- Napier BA, Eslinger PW, Tolstykh EI, Vorobiova MI, Tokareva EE, Akhramenko BN, Krivoschapov VA, Degteva MO. Calculations of individual doses for Techa River Cohort members exposed to atmospheric radioiodine from Mayak releases. *J Environ Radioact* 178-179:156-167; 2017. DOI 10.1016/j.jenvrad.2017.08.013
- Shishkina EA, Pryakhin EA, Popova IYa, Osipov DI, Tikhova Yu, Andreev SS, Shaposhnikova IA, Egoreichenkov EA, Styazhkina EV, Deryabina LV, Tryapitsina GA, Melnikov V, Rudolfson G, Teien HC, Sneve MK, Akleyev AV. Evaluation of distribution coefficients and concentration ratios of <sup>90</sup>Sr

- and  $^{137}\text{Cs}$  in the Techa River and the Miass River. *J Environ Radioact* 158-159: 148-163; 2016.
- Shishkina EA, Volchkova AYU, Timofeev YS, Fattibene P, Wieser A, Ivanov DV, Krivoschapov VA, Zalyapin VI, Della Monaca S, De Coste V, Degteva MO, Anspaugh LR. External dose reconstruction in tooth enamel of Techa riverside residents. *Radiat Environ Biophys* 55(4):477-499; 2016.
  - Shishkina EA, Volchkova AYU, Degteva MO, Napier BA. Evaluation of dose rates in the air at non-uniform vertical distribution of gamma-emitting radionuclides in different types of soil. *Radiat Safety Problems (Mayak Production Association Scientific Journal) №3:43 & 52*; 2016 (in Russian).
  - Tolstykh EI, Degteva MO, Bougrov NG, Napier BA. Body Potassium Content and Radiation Dose from  $^{40}\text{K}$  for the Urals Population (Russia). *PloS ONE* 11(4):e0154266. doi:10.1371/journal.pone.0154266; 2016.
  - Tolstykh EI, Peremyslova LM, Degteva MO, Napier BA. Reconstruction of radionuclide intakes for the residents of East Urals Radioactive Trace (1957-2011). *Radiat Environ Biophys* 56(1):27-45; 2017; DOI 10.1007/s00411-016-0677-y.
  - Tolstykh EI, Degteva MO, Vozilova AV, Anspaugh LR. Local bone-marrow exposure: how to interpret the data on stable chromosome aberrations in circulating lymphocytes? (some comments on the use of FISH method for dose reconstruction for Techa riverside residents). *Radiat Environ Biophys* 56(4):389-403; 2017; DOI 10.1007/s00411-017-0712-7.
  - Tryapitsina GA, Osipov DI, Yegoreichenkov EA, Shishkina EA, Rudolfson G, Teien H-C, Sneve M, Pryakhin EA, Akleyev AV. Assessment of erythropoiesis status in roach (*Rutilus rutilus*) of the radioactively contaminated Techa River. *Radiat Biol Radioecol* 57: 98-107; 2017 (in Russian).
  - Yarmoshenko IV, Malinovsky GP, Zhukovsky MV, Tolstykh EI. Comparison of measures on protection against accidental radiation and indoor radon exposure in Muslyumovo, Techa River. *Radiation Protection Dosimetry* 177(1-2): 125-129; 1 November 2017.
  - Zhang Zh, Preston DL, Sokolnikov M, Napier BA, Degteva M, Moroz B, Vostrotin V, Shiskina E, Birchall A, Stram D. Correction of confidence intervals in excess relative risk models using Monte Carlo dosimetry systems with shared errors. *PloS ONE* 12(4):e017464641. doi:10.1371/journal.pone.0174641; 2017.
  - Zhukovsky M.V., Yarmoshenko I.V., Malinovsky G.P., Tolstykh E.I. Analysis of the effectiveness of measures on reduction population radiation doses due to technogenic and natural sources on the example of Muslyumovo village, the river Techa. *Radiatsionnaya Gygiena = Radiation Hygiene*. 2017;10(1):30-35. (In Russ.) <https://doi.org/10.21514/1998-426X-2017-10-1-30-35>
  - Degteva MO, Tolstykh EI, Suslova KG, Romanov SA, Akleyev AV. Analysis of the results of long-lived radionuclide body burden monitoring in

residents of the Urals region. Radiatsionnaya gygiena=Radiation Hygiene, 2018, Vol. 11, No. 3, pp. 30-39 (in Russian).

- Shishkina EA, Volchkova AYU, Degteva MO, Napier BA. Dose coefficients to convert air kerma into organ dose rate values for people of different ages externally exposed to  $^{137}\text{Cs}$  in soil. Radiat Safety Problems (Mayak Production Association Scientific Journal) 89(1):36-47; 2018 (in Russian).
- Zalyapin VI, Timofeev YuS, Shishkina EA. A parametric stochastic model of bone geometry. Bulletin of Southern Urals State University, Issue «Mathematical Modelling. Programming & Computer Software» (SUSU MMCS) 11(2): 44-57 2018; DOI:10.14529/mmp180204.
- Degteva MO, Napier BA, Tolstykh EI, Shishkina EA, Shagina NB, Volchkova AYU, Bougrov NG, Smith MA, Anspaugh LR.. Enhancements in the Techa River Dosimetry System: TRDS-2016D code for reconstruction of deterministic estimates of dose from environmental exposures. Health Phys. 2019 117(4):378-387.
- Degteva MO, Napier BA, Tolstykh EI, Shishkina EA, Bougrov NG, Krestinina LYU, Akleyev AV. Individual dose distribution in cohort of people exposed as a result of radioactive contamination of the Techa River. Med Radiol Radiat Saf 64(3):46–53; 2019 (in Russian).
- Shishkina EA, Pryakhin EA, Sharagin PA, Osipov DI, Tryapitsina GA, Atamanyuk NI, Egoreichenkov EA, Trapeznikov AV, Rudolfson G, Teien HC, Sneve MK. The radiation exposure of fish in the period of the Techa river peak contamination. Journal of Environmental Radioactivity 201:43–55; 2019.
- Shishkina EA, Volchkova AY, Ivanov DV, Fattibene P, Wieser A, Krivoschapov VA, Degteva MO, Napier BA. Application of EPR tooth dosimetry for validation of the calculated external doses: Experience in dosimetry for the Techa River Cohort. Radiat Prot Dosim 186(1):70-77; 2019 doi:10.1093/rpd/ncy258.
- Tolstykh EI, Vozilova AV, Degteva MO, Anspaugh LR. New approaches to interpretation of the results of FISH method in case of non-uniform exposure of a person's body at different age. Radiat Safety Problems (Mayak Production Association Scientific Journal) 93(1):69-78; 2019 (in Russian).
- Tolstykh EI, Degteva MO, Vozilova AV, and Akleyev AV. Interpretation of FISH results in the case of nonuniform internal radiation exposure of human body with the use of model approach. Genetics 55(10): 1172-79; 2019 (in Russian). Russian Journal of Genetics, 2019, 55(10):1227–33 (in English).
- Tolstykh EI, Degteva MO, Krivoschapov VA, Napier BA. Method for assessing individual values of  $^{90}\text{Sr}$  diet intake based on tooth-beta-counter measurements in residents of the Techa Riverside settlements. Radiat Safety Problems (Mayak Production Association Scientific Journal) 93(4):55-63; 2019 (in Russian).
- Eslinger PW, Degteva MO, Napier BA, Tolstykh EI, Tokareva EE. Individual doses for super cohort members exposed to atmospheric

radioiodine from the Mayak releases with an emphasis on prenatal doses. *J Environ Radioact* 217 106219; 2020; doi.org/10.1016/j.jenvrad.2020.106219.

- Giussani A, Lopez MA, Romm H, Testa A, Ainsbury EA, Degteva M, Della Monaca S, Etherington G, Fattibene P, Guclu I, Jaworska A, Lloyd DC, Malatova I, McComish S, Melo D, Osko J, Rojo A, Roch-Lefevre S, Roy L, Shishkina E, Sotnik N, Tolmachev SY, Wieser A, Woda C, Youngman M. Eurados review of retrospective dosimetry techniques for internal exposures to ionising radiation and their applications. *Radiat Environ Biophys* 2020; 59:357–387; <https://doi.org/10.1007/s00411-020-00845-y>.
- Shishkina EA, Timofeev YS, Volchkova AY, Sharagin PA, Zalyapin VI, Degteva MO, Smith MA, and B.A. Napier. Trabecula: a random generator of computational phantoms for bone marrow dosimetry. *Health Phys*. 118(1):53–59; 2020.
- Tolstykh EI, Vozilova AV, Degteva MO, and Akleyev AV. The concept of a T-cell Genus as a basis for analysis of the results of cytogenetic studies with local bone marrow irradiation. *Biology Bulletin*, 47(11): 25–36; 2020.
- Woda C, Hiller M, Ulanowski A, Bugrov NG, Degteva MO, Ivanov O, Romanov S, Tschiersch J, Shinonaga T. Luminescence dosimetry for evaluation of the external exposure in Metlino, upper Techa River valley, due to the shore of the Metlinsky Pond: A feasibility study. *Journal of Environmental Radioactivity* 214-215 (2020) 106152.
- Degteva MO, Tolstykh EI, Shishkina EA, Sharagin PA, Zalyapin VI, Volchkova AY, Smith MA, Napier BA. “Stochastic Parametric Skeletal Dosimetry model for humans: General approach and application to active marrow exposure from bone-seeking beta-particle emitters” *PLOS One*, 16(10): e0257605. DOI: 10.1371/journal.pone.0257605
- Shishkina E.A., Sharagin P.A., Volchkova A.Yu. Analytical description of dose formation in bone marrow from <sup>90</sup>Sr incorporated in calcified tissues. *Radiat Safety Problems (Mayak Production Association Scientific Journal)* 92(3):72-82; 2021 (in Russian).
- Tolstykh EI, Degteva MO, Vozilova AV, Akleyev AV. Approaches to the Cytogenetic Assessment of the Dose due to Radiation Exposure of the Gut Associated Lymphoid Tissue. *Radiat Biol Radioecol*. 61(4):339-352; 2021 (in Russian).
- Толстых Е.И., Дегтева М.О., Аклеев А.В. Оценка доз облучения лимфоцитов при пероральном поступлении радионуклидов различной тропности. *Радиационная Гигиена*. 14(3): 18-28.
- Старцев Н.В., Шишкина Е.А., Блинова Е.А., Аклеев А.В. Справочно-информационный комплекс REGISTR Уральского научно-практического центра радиационной медицины ФМБА России // *Медицинская радиология и радиационная безопасность*. 2022. Т. 67. № 1. С. 46–53. DOI: 10.12737/1024-6177-2022-67-1-46-53

- Hiller M., Woda C., Degteva M., Bugrov N., Shishkina E., Pryakhin E., Ivanov O. External dose reconstruction at the shore of the Metlinsky Pond in the former village of Metlino (Techa River, Russia) based on environmental surveys, luminescence measurements and radiation transport modelling. *Radiation and Environmental Biophysics*. 2022. 61(1): C. 87-109. PMID: 34816291 DOI: 10.1007/s00411-021-00953-3
- Рабинович ЕИ, Поволоцкая СВ, Дегтева МО, Толстых ЕИ. Связь распространенности заболеваний щитовидной железы с дозой облучения у лиц, переселенных с радиоактивно загрязненных территорий Южного Урала. *Радиационная гигиена*. 2022. Т 15, №1, с. 36-46. doi: 10.21514/1998-426X-2022-15-1-36-46.
- Толстых Е.И., Дегтева М.О. Оценка доз облучения лимфоцитов и их предшественников при пероральном поступлении стронция-89,90. *Радиационная гигиена*. 2022. Т 15, №3, с. 82-91. doi: 10.21514/1998-426X-2021-15-3-82-91.
- Tolstykh E.I., Degteva M.O., Vozilova A.V., Akleyev A.V. Approaches to Cytogenetic Assessment of the Dose due to Radiation Exposure of the Gut-Associated Lymphoid Tissue / E.I. Tolstykh, M.O. Degteva, A.V. Vozilova, A.V. Akleyev // *Biol. Bull.* 2022. V.49. №11. P.1-12. DOI: 10.1134/S1062359022110206.
- Volchkova A.Yu., Sharagin P.A., Shishkina E.A. Internal bone marrow dosimetry: the effect of the exposure due to  $^{90}\text{Sr}$  incorporated in the adjacent bone segments. *Bulletin of the South Ural State University. Ser. Mathematical Modelling, Programming & Computer Software (Bulletin SUSU MMCS)*, 2022, vol. 15, no. 4, pp. 44–58 DOI: 10.14529/mmp220404
- Шарагин П.А., Шишкина Е.А., Толстых Е.И. Вычислительный фантом для дозиметрии красного костного мозга новорожденного ребенка от инкорпорированных бета-излучателей. *Медицина экстремальных ситуаций*. 2022; 24 (4): 74–81. DOI: 10.47183/mes.2022.045 (онлайн)
- Шарагин П.А., Шишкина Е.А., Толстых Е.И., Дегтева М.О. Влияние детализации трабекулярной структуры фантомов кости на оценку дозы облучения костного мозга от  $^{89,90}\text{Sr}$ . *Радиационная гигиена*. 2022. Т. 15. № 4. С. 7-14.
- Woda C., Hiller M., Ademola J.A., Bugrov N.G., Degteva M.O., Napier B. Luminescence dosimetry for evaluation of the external exposure in Metlino, upper Techa River valley, Southern Urals, Russia: Analysis of new results. *Applied Radiation and Isotopes*. 193, 2023, 110618, <https://doi.org/10.1016/j.apradiso.2022.110618>.
- Shishkina EA, Ivanov DV, Biryukhova UD, Pryakhin EA, Tryapitsina GA. Fish otoliths as biological dosimeter: internal dose calculation. *Radiat Environ Biophys*. 2023 Mar;62(1):143-150. doi: 10.1007/s00411-022-01007-y. Epub 2022 Nov 27. PMID: 36436118.
- Shishkina E, Shuiskaya A, Sharagin P. Bone marrow dosimetry for mice: exposure from bone-seeking  $^{89,90}\text{Sr}$ . *Radiat Environ Biophys*. 2023

Mar;62(1):131-142. doi: 10.1007/s00411-022-01010-3. Epub 2022 Dec 27. PMID: 36574034.

- Шишкина Е.А., Шарагин П.А., Толстых Е.И. Неопределенность оценки доз в костном мозге от  $^{89,90}\text{Sr}$  из-за изменчивости химического состава и плотности кости. Радиационная гигиена. 2023;16(2):32-43. <https://doi.org/10.21514/1998-426X-2023-16-2-32-43>
- Shishkina E A, Degteva M O, Napier B A. EPR-based uncertainty validation of the calculated external doses for population exposed in the Urals region. Radiation Protection Dosimetry, Volume 199, Issue 14, September 2023, Pages 1586–1590, <https://doi.org/10.1093/rpd/ncac238>
- Shishkina EA, Napier BA, Preston DL, Degteva MO Dose estimates and their uncertainties for use in epidemiological studies of radiation-exposed populations in the Russian Southern Urals. PLOS ONE 18(8): e0288479, 2023. <https://doi.org/10.1371/journal.pone.0288479>
- Толстых Е.И., Возилова А.В., Дегтева М.О., Аклеев А.В. Зависимость частоты транслокаций в лимфоцитах крови от дозы и возраста на начало облучения у жителей прибрежных сел реки Теча. Радиационная биология. Радиоэкология. 2023. Т. 63. № 2. С. 115-127.
- Шарагин, П. А., Шишкина, Е. А. и Толстых, Е. И. (2023), "Вычислительный фантом для дозиметрии красного костного мозга годовалого ребенка от инкорпорированных бета-излучателей", Медицина экстремальных ситуаций, №3, с. 45–55. DOI: 10.47183/mes.2023.030
- Шарагин П.А., Шишкина Е.А., Толстых Е.И. Вычислительный фантом для дозиметрии красного костного мозга пятилетнего ребенка от инкорпорированных бета излучателей. Медицина экстремальных ситуаций. №4, с. 124-135, 2023; DOI: 10.47183/mes.2023.061
- Tolstykh EI, V. Vozilova AV, Degteva MO, Akleyev AV Dependence of the Translocation Frequency in Blood Lymphocytes on the Dose and Age at the Onset of Exposure in Residents of the Techa Riverside Settlements. Biology Bulletin, 2023, Vol. 50, No. 12, pp. 3184–3195. © Pleiades Publishing, Inc., 2023. Russian Text © The Author(s), 2023, published in Radiatsionnaya Biologiya. Radioekologiya, 2023, Vol. 63, No. 2, pp. 115–127.
- Shishkina EA, Sharagin PA, Tolstykh EI, Smith MA, Napier BA, Degteva MO. Uncertainty of stochastic parametric approach to bone marrow dosimetry of  $^{89,90}\text{Sr}$ . Heliyon. 2024 Feb 10;10(4):e26275. doi: 10.1016/j.heliyon.2024.e26275. PMID: 38420372; PMCID: PMC10900932.
- Шишкина Е.А., Шарагин П.А., Толстых Е.И. Влияние изменчивости морфометрических параметров костей человека на неопределенность доз внутреннего облучения костного мозга от  $^{90}\text{Sr}$ . Радиационная гигиена. 2024;17(1):60-68. <https://doi.org/10.21514/1998-426X-2024-17-1-60-68>

- Tolstykh, E.I., Vozilova, A.V., Akleyev, A.V. et al. Model of age-dependent dynamics and biokinetics of T-cells as natural biodosimeters. *Radiat Environ Biophys* (2024). <https://doi.org/10.1007/s00411-024-01072-5>
- Шишкина Е.А., Атаманюк Н.И., Перетыкин А.А., Пряхин Е.А. Дозы на весь организм и их неопределенность при облучении мышей на гамма-радиобиологической установке ИГУР-1М. АНРИ, №2 (117), 2024, С. 63-75. DOI: 10.37414/2075-1338-2024-117-2-63-75
- Шарагин П.А., Толстых Е.И., Шишкина Е.А. Вычислительный фантом для дозиметрии красного костного мозга десятилетнего ребенка от инкорпорированных бета-излучателей. Медицина экстремальных ситуаций. 2024; (2): 38–48. DOI: 10.47183/mes.2024.032
- Толстых Е.И. Переход от частоты хромосомных транслокаций в Т-лимфоцитах к дозе на костный мозг в отдаленные сроки после внутреннего облучения  $^{89}\text{Sr}$ . Радиационная гигиена. 2024;17(2):53-63. <https://doi.org/10.21514/1998-426X-2024-17-2-53-63>
- Толстых Е.И., Шарагин П.А., Шишкина Е.А. Моделирование в дозиметрии и биодозиметрии. Хватает ли знаний об устройстве человеческого организма? Траектория исследований – человек, природа, технологии. 2024. № 2 (10): 3-17. <https://restrajjectory.ru/10-2.pdf>
- Толстых Е.И., Ахмадуллина Ю.Р., Шарагин П.А., Шишкина Е.А., Аклеев А.В. Ретроспективная биодозиметрия. Проблема конвертации частоты хромосомных транслокаций в дозу на органы. Медицина экстремальных ситуаций. 2024, Т. 26, № 3, с. 5-14. <https://doi.org/10.47183/mes.2024-26-3-5-14>
- Шишкина Е.А., Шарагин П.А., Толстых Е.И. Компьютерная программа расчета внутриутробных доз от техногенных радионуклидов. Радиационная гигиена. 2025;18(1):121-126. <https://doi.org/10.21514/1998-426X-2025-18-1-121-126>
- Shishkina EA, Tyukhay MV, Peretykin AA, Pryakhin EA, Akleyev AV. Bone and head kidney radiation dosimetry for roach from radioactively contaminated reservoirs: Method elaboration and application. *J Environ Radioact*. 2025. 285:107659. doi: 10.1016/j.jenvrad.2025.107659.
- Shishkina, E.A., Khramova, E., Mogilnikova, N. et al. Internal radiation dose to the herring gull embryo due to  $^{90}\text{Sr}$  in the egg. *Radiat Environ Biophys* 64, 311–319 (2025). <https://doi.org/10.1007/s00411-025-01119-1>.
- Шарагин П.А., Толстых Е.И., Шишкина Е.А. Вычислительный фантом для дозиметрии красного костного мозга для взрослых мужчины и женщины. Медицина экстремальных ситуаций. <https://doi.org/10.47183/mes.2025-286>
- Preston D.L., Krestinina L.Y., Stram D.O., Epifanova S.B., Shishkina E.A., Napier B.A., Moroz B.E., Startsev N.V., Degteva M.O., Akleyev A.V. Radiation Dose and Solid Cancer Mortality Risk in the Techa River and East Urals Radioactive Trace Cohorts in 1950–2016. *Radiation Research* 204(1), 15-26, (27 May 2025). <https://doi.org/10.1667/RADE-24-00195>.

- Sharagin PA, Shishkina EA, Tolstykh EI, Smith MA, Napier BA (2025) Stochastic parametric skeletal dosimetry model for humans: Pediatric and adult computational skeleton phantoms for internal bone marrow dosimetry. PLOS ONE 20(7): e0327479. <https://doi.org/10.1371/journal.pone.0327479>
- Tolstykh EI, Sharagin PA, Shishkina EA, Volchkova AY, Smith MA, Napier B. (2025) Stochastic parametric skeletal dosimetry model for humans: Anatomical-morphological basis and parameter evaluation. PLOS ONE 20(7): e0327156. <https://doi.org/10.1371/journal.pone.0327156>