Russian Health Studies Program
Peer Reviewed Publications and Outcomes
December 31, 2012

Project Number	Project Name	U.S. PI	Russian PI	Number of Peer-Reviewed Publications	Outcomes
1.1	Techa River Population Dosimetry 1999-2003 2004-2006 2007-2009 2010-2014	Bruce Napier *Pacific Northwest National Laboratory-Battelle*	Marina Degteva *Urals Research Center for Radiation Medicine*	105	This project provides the foundation for the derivation of radiation risk from studies of the Techa River Cohort. It provides the dosimetry data for Project 1.2b, Techa River Population Morbidity, and for related studies of the U.S. National Cancer Institute and the European Commission. This study is important because it addresses the question of radiogenic risk from dose received at low dose rates. In addition, this project is providing valuable, new information for improving dose estimation from the intake of ^{90}Sr. The Techa River Dosimetry System (TRDS)-2009D (deterministic) has been completed. Current work emphasizes calculation of individual external dose based upon the location of a person's home and the development of a stochastic version of the dosimetry system with full evaluation of uncertainty in individual doses. Researchers plan to complete the next iteration of the dosimetry system, TRDS-2014, in 2014.

Project Number	Project Name	U.S. PI	Russian PI	Number of Peer-Reviewed Publications	Outcomes
1.2a	Data Preservation at URCRM 1997-2005	Donna Cragle *Oak Ridge Institute for Science and Education*	Nikolai Startsev *Urals Research Center for Radiation Medicine*	1	This completed project established a document imaging system at URCRM for preserving valuable medical records of residents of the Southern Urals region exposed to radiation due to the operations of the Mayak facility and environmental releases. These documents contain information from 1951 to the present with details of medical examinations, individual dose measurements, addresses, causes of death, and other data necessary for epidemiologic studies and dose reconstruction. Computer scanning equipment was purchased, installed, and later updated. Scanning, verification, indexing, and creation of a computer database of the scanned documents were completed.

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1.2b	Techa River Population Morbidity 1997-2003 2004-2006 2007-2009 2010-2014	Faith Davis *University of Illinois at Chicago*	Alexander Akleyev *Urals Research Center for Radiation Medicine*	28	The combined work of Projects 1.1 and 1.2b addresses the important question of the validity of the dose-response model (linear, non-threshold) used by national and international authorities in the development of radiation-protection standards, particularly as applied to radiation delivered at low dose rates. The Extended Techa River Cohort reflects a general population exposed to moderate doses of radiation at low dose rates 50 years ago. The population is relatively large (~30,000) and has been actively followed so that results can be expected within a reasonable time frame. Preliminary results using the new Techa River Dosimetry System (TRDS)-2009D (deterministic) indicate an excess in leukemia and solid cancer risks in this population. Work identifying confounding sources of exposure and other risk factors is ongoing.

Project Number	Project Name	U.S. PI	Russian PI	Number of Peer-Reviewed Publications	Outcomes
1.4	Reconstruction of Dose to the Residents of Ozersk from Mayak Operations 2003-2004 2005-2009 2013	Bruce Napier *Pacific Northwest National Laboratory-Battelle* Lynn Anspaugh *University of Utah*	Yuri Mokrov *Mayak Production Association*	8	This project is concerned with the reconstruction of doses to the residents of Ozersk from the airborne radionuclide emissions from Mayak. Focus is on the emission of ^{131}I and dose to the thyroid glands of children. Data may be used to support a potential epidemiologic study of thyroid cancer in children sponsored by the National Cancer Institute. This should help resolve the dichotomy between the studies at Hanford (no observed effect) and Chernobyl (large effect). Completion of the project and associated documentation is expected in 2013.
2.2	Mayak Worker Mortality 1997-2001 2002-2004 2005-2007 2008-2012 2013	Vacant (formerly, Ethel Gilbert *National Cancer Institute*)	Mikhail Sokolnikov *Southern Urals Biophysics Institute*	8	This project is the first to demonstrate statistically significant associations between occupational exposure to plutonium (Pu) and lung, liver, and bone cancer. Dose-response analyses based on Mayak Worker Doses 2005 database have been conducted for lung, liver, and bone cancer and express the excess relative risk as a function of plutonium dose, external dose, gender, and attained age. Statistically significant dose-response relationships for external dose have also been demonstrated for leukemia; all solid cancer excluding lung, liver, and bone cancer; and lung cancer. Currently, researchers are computing new cancer risk estimates based on the Mayak Worker Dosimetry System 2008.

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2.4	Mayak Worker Dosimetry 1998-2000 2001-2003 2004-2006 2007-2009 2009-2013	Bruce Napier *Pacific Northwest National Laboratory-Battelle*	Alexander Efimov (internal dosimetry) *Southern Urals Biophysics Institute*	56	In addition to providing the dosimetric data for Project 2.2, Mayak Worker Mortality, this project has enhanced the understanding of Pu metabolism in the human body and improved the biokinetic models for assessing dose from Pu uptakes. These outcomes will be of direct benefit to DOE in improving the determination of dose to DOE workers from Pu exposure. Additionally, this project has improved the interpretation of worker external dosimetry and developed improved methods of estimating organ doses based on dosimeter results. These improved methods can be applied to the evaluation of worker dose at DOE facilities. This project also developed important relationships for the role of medical x-rays for worker exposure. Researchers completed the Mayak Worker Dosimetry System (MWDS) 2008 database for 25,940 workers hired between 1948 and 1982, which is being used to develop cancer and non-cancer risk estimates. Researchers plan to complete the next iteration of the dosimetry system, MWDS-2013, in 2013.

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2.5	Improved Plutonium Dose Assessment Methods for Mayak Workers 1999-2003 2004-2006 2008-2009	Robert Scherpelz *Pacific Northwest National Laboratory-Battelle* (formerly Raymond Guilmette, *Lovelace Respiratory Research Institute*)	Sergey Romanov *Southern Urals Biophysics Institute*	12	The earlier efforts in this project focused on determining the amount and location of long-term-retained Pu in the lungs of Mayak workers. This study was the first to demonstrate very long-term sequestration of Pu particles in human lung parenchyma. Then, this knowledge of Pu distribution in lung was used with state of the art dose assessment methods to modify the human respiratory tract dosimetry models to improve dose assessment. In 2009, the activities of Project 2.5 were merged into Project 2.4, and the results of the earlier investigations were used in the development of the Mayak Worker Dosimetry System 2008.
2.6	Molecular Markers of Lung Cancer in Mayak Workers 2000-2002 2003-2008	Steve Belinsky *Lovelace Respiratory Research Institute*	Vitaly Telnov *Southern Urals Biophysics Institute*	4	The original phase of this completed project demonstrated that the p16 tumor suppressor gene was targeted for inactivation by promoter hypermethylation in plutonium-induced adenocarcinomas of the lung. In the final phase, researchers examined methylation profiles in adenocarcinomas and squamous cell carcinomas of the lung in Mayak workers and controls.
2.7	Radiation Biomarkers 2001-2002 2003-2008	David Brenner *Columbia University*	Tamara Azizova *Southern Urals Biophysics Institute*	5	The feasibility study of this completed project indicated a statistically significant dose-response between Pu exposure and intra-arm chromosomal aberrations from worker blood samples. In the final phase, researchers developed a calibrated, dose-related biomarker of Pu exposure.

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2.8	Mayak Worker Tissue Repository 1998-2002 2003-2007 2008-2012 2013-2017	Christopher Loffredo *Georgetown University*	Evgenia Kirillova *Southern Urals Biophysics Institute*	31	The Mayak Worker Tissue Repository now holds tissues from 1,740 subjects (945 from autopsy and 795 from surgery or biopsy) and blood DNA, cells, serum, plasma, and other biological samples from 5,100 Mayak workers and residents of Ozersk. In conjunction with medical, occupational, and dosimetry information, data collected in the repository will make possible the conduct of molecular epidemiology studies. Such studies combine epidemiologic with genetic/molecular methods to establish an association between disease and radiation exposure in individuals.
2.9	Database Integration 2001-2005	Dale Preston *Hirosoft International* Eric Grant *Radiation Effects Research Foundation*	Sergey Romanov *Southern Urals Biophysics Institute*; Evgeny Vasilenko *Mayak Production Association*	0	This completed project successfully combined databases located in two Russian organizations so as to facilitate researcher access to data. As such, it is not intended to result in publications or influence radiation protection standards.

As of December 31, 2012, U.S. and Russian investigators working on projects funded by the Russian Health Studies Program have generated 258 peer-reviewed publications. Of these, 16 were published in 2012.

Russian Health Studies Program
258 Peer Reviewed Publications
December 31, 2012

Project 1.1: Techa River Population Dosimetry (105)

1. Anspaugh, L.R.; Degteva, M.O.; Vasilenko, E.K. Mayak Production Association: Introduction. *Radiat. Environ. Biophys.* 41:19–22; 2002.

2. Anspaugh, L.R.; Shishkina, E.A.; Shved, V.A.; Degteva, M.O.; Tolstykh, E.I.; Napier, B.A. Comment on paper by Hayes, Haskell, and Kenner. *Health Phys.* 85:622–624; 2003.

3. Anspaugh, L.R.; Degteva, M.O.; Vorobiova, M.I.; Mokrov, Y. G; Napier, B.A. Dosimetry for members of the Extended Techa River Cohort. *Health Phys.* 91:393–394; 2006.

4. Bauchinger, M.; Salassidis, K.; Braselmann, H.; Vozilova, A.; Pressl, S.; Stephan, G.; Snigiryova, G.; Kozheurov, V.P.; Akleyev, A. FISH-based analysis of stable translocations in a Techa River population. *Intl. J. Radiat. Biol.* 73:605–612; 1998.

5. Bougrov, N.G.; Göksu, H.Y.; Haskell, E.; Degteva, M.O.; Meckbach, R.; Jacob, P. Issues in the reconstruction of environmental doses on the basis of thermoluminescence measurements in the Techa Riverside. *Health Phys.* 75:574–583; 1998.

6. Bougrov, N.G.; Degteva, M.O.; Göksu, H.Y.; Meckbach, R.; Jacob, P. Retrospective thermoluminescence dosimetry in the riverside territories of the upper-Techa River. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) 2001 (3):51−62 (in Russian).

7. Bougrov, N.G.; Baturin, V.A.; Göksu, H.Y.; Degteva, M.O.; Jacob, P. Investigation of thermoluminescence dosimetry in the Techa River flood plain: Analysis of the new results. *Radiat. Prot. Dosim.* 101:225–228; 2002.

8. Bougrov, N.G.; Degteva, M.O.; Arshansky, S.M. Modernized whole-body counter SICH-9.1M for in vivo measurements of ^{90}Sr and ^{137}Cs body burden. *Medicine of Extreme Situations* (Scientific and Practical Journal of the Medical-Biological Agency of the Russian Federation) 2008(4):78–86 (in Russian).

9. Bougrov, N.G.; Degteva, M.O.; Vorobiova, M.I.; Jacob, P.; Göksu, Y. Assessment of anthropogenic dose distribution in Metlino village reconstructed using luminescence methods. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) 2009(3):33–47 (in Russian).

10. Degteva, M.O.; Kozheurov, V.P.; Burmistrov, D.S.; Vorobiova, M.I.; Valchuk, V.V.; Bougrov, N.G.; Shishkina, H.A. An approach to dose reconstruction for the Urals population. *Health Phys.* 71:71–76; 1996.

11. Degteva, M.O.; Kozheurov, V.P.; Tolstykh, E.I. Retrospective dosimetry related to chronic environmental exposure. *Radiat. Prot. Dosim.* 79:155–160; 1998.

12. Degteva, M.O.; Vorobiova, M.I.; Kozheurov, V.P.; Tolstykh, E.I.; Anspaugh, L.R.; Napier, B.A. Dose reconstruction system for the exposed population living along the Techa River. *Health Phys.* 78:542–554; 2000.

13. Degteva, M.O.; Kozheurov, V.P.; Tolstykh, E.I.; Vorobiova, M.I.; Anspaugh, L.R.; Napier, B.A.; Kovtun, A.N. The Techa River Dosimetry System: Methods for the reconstruction of internal dose. *Health Phys.* 79:24–35; 2000.

14. Degteva, M.O.; Vorobiova, M.I.; Tolstykh, E.I.; Shagina, N.B.; Anspaugh, L.R.; Napier, B.A. Dosimetry of the Techa River System: Dose reconstruction for radiation consequences risk assessment. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) 2000(4):36–46 (in Russian).

15. Degteva, M.O.; Tolstykh, E.I.; Vorobiova, M.I.; Shagina, N.B.; Kozheurov, V.P.; Anspaugh, L.R.; Napier, B.A. Improving the dose reconstruction system for estimating the risk of late effects in the Techa River population. *Med. Radiol. Radiat. Saf.* 46:9–21; 2001 (in Russian).

16. Degteva, M.O.; Shagina, N.B.; Tolstykh, E.I.; Vorobiova, M.I.; Napier, B.A.; Anspaugh, L.R. Studies on the Techa River populations: Dosimetry. *Radiat. Environ. Biophys.* 41:41–44; 2002.

17. Degteva, M.O.; Tolstykh, E.I.; Vorobiova, M.I. Assessment of doses to the offspring of the Techa River Cohort due to intakes of radionuclides by the mother. *Radiat. Prot. Dosim.* 105:609–614; 2003.

18. Degteva, M.O.; Anspaugh, L.R.; Akleyev, A.V.; Jacob, P.; Ivanov, D.V.; Wieser, A.; Vorobiova, M.I.; Shishkina, E.A.; Shved, V.A.; Vozilova, A.; Bayankin, S.N.; Napier, B.A. Electron paramagnetic resonance and fluorescence in situ hybridization-based investigations of individual doses for persons living at Metlino in the upper reaches of the Techa River. *Health Phys.* 88:139–153; 2005.

19. Degteva, M.O.; Tolstykh, E.I.; Vorobiova, M.I.; Shagina, N.B.; Shishkina, E.A.; Bougrov, N.G.; Anspaugh, L.R.; Napier, B.A. Techa River Dosimetry System: Current status and future. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) 2006(1):66–80 (in Russian).

20. Degteva, M.O.; Vorobiova, M.I.; Tolstykh, E.I.; Shagina, N.B., Shishkina, E.A.; Anspaugh, L.R.; Napier, B.A.; Bougrov, N.G.; Shved, V.A.; Tokareva, E.E. Development of an improved dose reconstruction system for the Techa River population affected by the operation of the Mayak Production Association. *Radiat. Res.* 166:255–270; 2006.

21. Degteva, M.O.; Shagina, N.B.; Tolstykh, E.I.; Bougrov, N.G.; Zalyapin, V.I.; Anspaugh, L.R.; Napier, B.A. An approach to reduction of uncertainties in internal doses reconstructed for the Techa River population. *Radiat. Prot. Dosim.* 127:480–485; 2007.

22. Degteva, M.O.; Bougrov, N.G.; Vorobiova, M.I.; Jacob, P.; Göksu, H.Y. Evaluation of anthropogenic dose distribution amongst building walls at the Metlino area of the upper Techa River region. *Radiat. Environ. Biophys.* 47:469–479; 2008.

23. Degteva, M.O.; Shagina, N.B.; Vorobiova, M.I.; Anspaugh, L.R.; Napier, B.A. Re-evaluation of waterborne releases of radioactive materials from the "Mayak" Production Association into the Techa River in 1949-1951. *Health Phys* 102:25–38; 2012.

24. Glagolenko, Y.V.; Drozhko, E.G.; Mokrov,Y.G.; Rovny, S.I.; Stukalov, P.M.; Ivanov, I.A.; Alexakhin, A.I.; Vorobiova, M.I.; Degteva, M.O.; Akleyev, A.V. Reconstruction of parameters of the source of liquid radioactive waste discharges from the radiochemical plant into the Techa River. Report 1: Development of methods, main results. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal), Special Issue 2008:76–91 (in Russian) 72–86 (in English); 2008.

25. Göksu, H.Y.; Heide, L.M.; Bougrov, N.G.; Dalheimer, A.R.; Meckbach, R.; Jacob, P. Depth-dose distribution in bricks determined by thermoluminescence and by Monte-Carlo calculation for external γ-dose reconstruction. *Appl. Radiat. Isot.* 47:433–440; 1996.

26. Göksu, H.Y.; Degteva, M.O.; Bougrov, N.G.; Meckbach, R.; Haskell, E.H.; Bailiff, I.K.; Bøtter-Jensen, L.; Jungner, H.; Jacob, P. First international intercomparison of luminescence techniques using samples from the Techa River Valley. *Health Phys.* 82:94–102; 2002.

27. Göksu, H.Y.; Semiochkina, N.; Shishkina, E.A.; Wieser, A.; El-Faramawy, N.A.; Degteva, M.O.; Jacob, P.; Ivanov, D.V. Thin layer □-Al2O3: C beta dosimeters for the assessment of current dose rate in teeth due to 90Sr intake and comparison with electron paramagnetic resonance dosimetry. *Radiat. Prot. Dosim.* 101:507–513; 2002.

28. Haskell, E.H.; Hayes, R.B.; Romanyukha, A.A.; Kenner, G.H. Preliminary report on the development of a virtually non-destructive additive dose technique for EPR dosimetry. *Appl. Radiat. Isot.* 52:1065–1070; 2000.

29. Ivanov, D.V.; Shishkina, E.A.; Volchkova A.Y.; Timofeev, Yu.S. Changes in the EPR dosimetry method performance with time during long-term operation of equipment at IMP. *ANRI* (Instruments and Methods of Radiation Measurements) 66:65–70; 2011 (in Russian).

30. Ivanov, D.V.; Shishkina, E.A.; Ustinov, V.V. Influence of the spectrum analysis procedure on the accuracy of the tooth enamel ESR-Dosimetry. *Med Radiol Radiat Saf* 57(4):47–52; 2012 (in Russian).

31. Jacob, P.; Göksu, Y.; Taranenko, V.; Meckbach, R.; Bougrov, N.G.; Degteva, M.O.; Vorobiova, M.I. On an evaluation of external dose values in the Techa River Dosimetry System (TRDS) 2000. *Radiat. Environ. Biophys.* 42:169–174; 2003.

32. Khokhryakov, V.V.; Drozhko, E.G.; Glagolenko, Y.V.; Rovny, S.I.; Vasilenko, E.K.; Suslov, A.; Anspaugh, L.R.; Napier, B.A; Bouville, A.; Khokhryakov, V.F.; Suslova, K.G.; Romanov, S.A. Studies on the Ozyorsk population: Dosimetry. *Radiat. Environ. Biophys*. 41:33–35; 2002.

33. Koshta, A.A.; Wieser, A.; Ignatiev, E.A.; Bayankin, S.; Romanyukha, A.; Degteva, M.O. New computer procedure for routine EPR-dosimetry on tooth enamel: Description and verification. *Appl. Radiat. Isot.* 52:1287–1290; 2000.

34. Kovtun, A.N.; Puzikov, A.G.; Sokolov, I.A.; Kozheurov, V.P.; Degteva, M.O. Anthropomorphic phantom with strontium-90 incorporated in the skeleton. *Radiat. Prot. Dosim.* 89:302–304; 2000.

35. Kozheurov, V.P.; Zalyapin, V.I.; Shagina, N.B.; Tokareva, E.E.; Degteva, M.O.; Tolstykh, E.I.; Anspaugh, L.R.; Napier, B.A. Evaluation of uncertainties in the 90Sr-body-burdens obtained by whole-body count: Application of Bayes' rule to derive detection limits by analysis of *a posteriori* data. *Appl. Radiat. Isot.* 57:525–535; 2002.

36. Levina, S.G.; Shagina, N.B.; Akleyev, A.V.; Zakharov, S.G.; Shibkova, D.Z.; Deryagin, V.V.; Udachin, V.N; Popova, I.Y.; Zemerova, Z.P. Some regularities in the behavior of radionuclides in water of the lakes situated on the East-Urals Radioactive Trace. *Radiat. Biol. Radioecol.* 48:616–626; 2008 (in Russian).

37. Napier, B.A.; Shagina, N.B.; Degteva, M.O.; Tolstykh, E.I.; Vorobiova, M.I.; Anspaugh, L.R. Preliminary uncertainty analysis for the doses estimated using the Techa River Dosimetry System – 2000. *Health Phys.* 81:395–405; 2001.

38. Pafundi, D.; Lee, C.; Watchman, C.; Bourke, V.; Aris, J.; Shagina, N.; Harrison, J.; Fell, T.; Bolch, W. An image-based skeletal tissue model for the ICRP reference newborn. *Phys. Med. Biol.* 54:4497–4531; 2009.

39. Peremyslova, L.M.; Kostyuchenko, V.A.; Degteva, M.O.; Baturin, V.A.; Popova, I.Ya.; Akleyev, A.V. The usage of current population exposure dose for justification of EURT area rehabilitation. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) 2001(2):50–54 (in Russian).

40. Peremyslova, L.M.; Kostyuchenko, V.A.; Popova, I.Ya. Radiation-environmental situation in settlements located along the Karabolka River. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) № 2:29–37; 2010 (in Russian).

41. Peremyslova, L.M.; Kostyuchenko, V.A.; Popova. I.Ya.; Kazachenok, N.N. Radioecological situation in riverside settlements located on the Techa River. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) № 2:48–55; 2011 (in Russian).

42. Phipps, A.W.; Tolstykh, E.I.; Shagina, N.B.; Harrison, J.D.; Degteva, M.O. The application and adaptation of ICRP internal dosimetry models to the calculation of bone marrow tissue doses from ^{90}Sr for epidemiological studies of Techa River population. *Radiat. Biol. Radioecol.* 46:647–656; 2006.

43. Romanyukha, A.A.; Degteva, M.O.; Kozheurov, V.P.; Wieser, A.; Jacob, P.; Ignatiev, E.A.; Vorobiova, M.I. Pilot study of the Urals population by tooth electron paramagnetic resonance dosimetry. *Radiat. Environ. Biophys.* 35:305–310; 1996.

44. Romanyukha, A.A.; Ignatiev, E.A.; Degteva, M.O.; Kozheurov, V.P.; Wieser, A.; Jacob, P. Radiation doses from Ural region. *Nature* 381:199–200; 1996.

45. Romanyukha, A.A.; Hayes, R.B.; Haskell, E.H.; Kenner, G.H. Geographic variations in the structure of the EPR spectrum of irradiated tooth enamel. *Radiat. Prot. Dosim.* 84:445–450; 1999.

46. Romanyukha, A.A.; Seltzer, S.M.; Desrosiers, M.; Ignatiev, E.A.; Ivanov, D.V.; Bayankin, S.; Degteva, M.O.; Eichmiller, F.C.; Wieser, A.; Jacob, P. Correction factors in the EPR dose reconstruction for residents of the middle and lower Techa Riverside. *Health Phys.* 81:554–566; 2001.

47. Romanyukha, A.A.; Mitch, M.G.; Lin, Z.; Nagy, V.; Coursey, M. Mapping the distribution of 90Sr in teeth with a photostimulable phosphor imaging detector. *Radiat. Res.* 157:341–349; 2002.

48. Shagina, N.B.; Tolstykh, E.I.; Zalyapin, V.I.; Degteva, M.O.; Kozheurov, V.P.; Tokareva, E.E.; Anspaugh, L.R.; Napier, B.A. Evaluation of age and gender dependences of the rate of strontium elimination 25–45 years after intake: Analysis of data from residents living along the Techa River. *Radiat. Res.* 159:239–246; 2003.

49. Shagina, N.B.; Tolstykh, E.I.; Degteva, M.O. Improvements in the biokinetic model for strontium with allowance for age and gender differences in bone mineral metabolism. *Radiat. Prot. Dosim.* 105:619–622; 2003.

50. Shagina, N.B.; Bougrov, N.G.; Degteva, M.O.; Kozheurov, V.P.; Tolstykh, E.I. An application of in vivo whole body counting technique for studying strontium metabolism and internal dose reconstruction for the Techa River population. *Journal of Physics: Conference Series* 41:433–440; 2006.

51. Shagina, N.B.; Degteva, M.O.; Tolstykh, E.I.; Zalyapin, V.I.; Anspaugh, L.R.; Napier, B.A. Reduction of the uncertainties of the internal doses due to Strontium-90 for the Extended Techa River Cohort. *Radiat Safety Problems* (Mayak Production Association Scientific Journal) Special issue 1:5–25; 2006 (in Russian).

52. Shagina, N.B.; Tolstykh, E.I.; Fell, T.P.; Harrison, J.D.; Phipps, A.W.; Degteva, M.O. *In utero* and postnatal haemopoietic tissue doses resulting from maternal ingestion of strontium isotopes from the Techa River. *Radiat. Prot. Dosim.* 127:497–201; 2007.

53. Shagina, N.B.; Tolstykh, E.I.; Degteva, M.O.; Anspaugh, L.R.; Napier, B.A. Cortical bone resorption rate in elderly persons: Estimates from long-term in vivo measurements of ^{90}Sr in the skeleton. *Arch. Gerontol. Geriatr.* 2011; oi:10.1016/j.archger.2011.06.039.

54. Shagina, N.B.; Vorobiova, M.I.; Degteva, M.O.; Peremyslova, L.M.; Shishkina, E.A.; Anspaugh, L.R.; Napier, B.A. Reconstruction of the contamination of the Techa River in 1949-1951 as a result of releases from the "Mayak" Production Association. *Radiat Environ Biophys* 51:349-366; 2012.

55. Shagina NB, Golikov VYu, Degteva MO, Vorobiova MI, Anspaugh LR, Napier BA. Reconstruction of Individual Doses due to Medical Exposures for Members of the Techa River Cohort. *Med Radiol Radiat Saf* 57(3):13–25; 2012 (in Russian).

56. Shibkova, D.Z.; Efimova, N.V.; Tolstykh, E.I.; Andreeva, O.G. Compensatory adjustment of hemopoietic stem cell pool of CBA mice after acute intake of ^{90}Sr. *Radiat. Biol. Radioecol.* 45:180–190; 2005 (in Russian).

57. Shishkina, E.A.; Lyubashevskii, N.M.; Tolstykh, E.I.; Ignatiev, E.A.; Betenekova, T.A.; Nikiforov, S.V. A mathematical model for calculation of ^{90}Sr absorbed dose in dental tissues: Elaboration and comparison to EPR measurements. *Appl. Radiat. Isot.* 55:363–374; 2001.

58. Shishkina, E.A.; Degteva, M.O.; Shved, V.A.; Ivanov, D.V.; Bayankin, S.N.; Knyazev, V.A.; Vasilenko, E.K.; Smetanin, M.Y.; Gorelov, M.V. Problems and prospects of EPR researches in the Southern Urals. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) 2003(2):59–70 (in Russian).

59. Shishkina, E.A.; Göksu, H.Y.; El-Faramawy, N.A.; Semiochkina, N. Assessment of ^{90}Sr concentration in dental tissue using thin-layer beta-particle detectors and verification with numerical calculations. *Radiat. Res.* 163:462–467; 2005.

60. Shishkina, E.A.; Degteva, M.O.; Tolstykh, E.I.; Shved, V.A.; Tokareva, E.E.; Ivanov, D.V.; Bayankin, S.N.; Wieser, A; Göksu, H.Y.; Anspaugh, L.R. Results of tooth dosimetric investigations for residents of the Techa Riverside region. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) Special issue 1:26–44; 2006 (in Russian).

61. Shishkina, E.A.; Tokareva, E.E. Measurement of Sr-90 concentration in tooth tissues by method of passive TL detection. *Instr. Meth. Radiat. Meas.* 60:17–27; 2010.

62. Shishkina, E.A.; Degteva, M.O.; Tolstykh, E.I,; Volchkova, A.; Ivanov, D.V.; Wieser, A.; Della Monaca, S.; Fattibene, P. Extra high doses detected in the enamel of human teeth in the Techa riverside region. *Radiat. Meas.* 46:760–764; 2011.

63. Shishkina, E.A. Performance parameters and uncertainty of the method for assessment of ^{90}Sr concentration in small powder samples using α-Al_2O_3:C beta detectors. *Radiat. Meas* 47(1):19-26; 2012.

64. Shishkina, E.; Tolstykh, E.; Degteva, M; Ivanov, D.; Aladova, E. Variability of the radiation sensitivity for tooth enamel of the Ural residents. *ANRI (Instruments and Methods of Radiation Measurements)* 69:41–50, 2012 (in Russian).

65. Straume, T.; Anspaugh, L.R.; Haskell, E.H.; Lucas, J.N.; Marchetti, A.A.; Likhtarev, I.A.; Chumak, V.V.; Romanyukha, A.A.; Khrouch, V.T.; Gavrilin, Yu.I.; Minenko, V.A. Emerging technological bases for retrospective dosimetry. *Stem Cells* 15(Suppl.):183–193; 1997.

66. Taranenko, V.; Meckbach, R.; Degteva, M.O.; Bougrov, N.G.; Göksu, Y.; Vorobiova, M.I.; Jacob, P. Verification of external exposure assessment for the Upper Techa Riverside by luminescence measurements and Monte Carlo photon transport modeling. *Radiat. Environ. Biophys.* 42:17–26; 2003.

67. Tikunov, D.D.; Ivannikov, A.I.; Shishkina, E.A.; Petin, D.V.; Borysheva, N.B.; Orlenko, S.; Nalapko, M.; Shved, V.A.; Skvortsov, V.G.; Stepanenko, V.F. Complex experimental research on internal tooth dosimetry for the Techa River region: A model for 90Sr accumulation in human teeth formed by time of intakes. *Radiat. Meas.* 41:565–576; 2006.

68. Timofeev, Y.S.; Shishkina, E.A.; Ivanov, D.V.; Fattibene, P.; Wieser, A.; Zalyapin, V.I. Universality investigation of semi-empirical approach to uncertainty estimation in EPR-dosimetry of tooth enamel. *Bull. Southern Urals State University, Series 5 on Math. Modeling and Programming* 2010(16):94–106 (in Russian).

69. Tolstykh, E.I.; Kozheurov, V.P.; Vyushkova, O.V.; Degteva, M.O. Analysis of strontium metabolism in humans on the basis of the Techa River data. *Radiat. Environ. Biophys.* 36:25–29; 1997.

70. Tolstykh, E.I.; Degteva, M.O.; Kozheurov, V.P.; Burmistrov, D.S. Strontium transfer from maternal skeleton to the fetus estimated on the basis of the Techa River data. *Radiat. Prot. Dosim.* 79:307–310; 1998.

71. Tolstykh, E.I.; Degteva, M.O.; Kozheurov, V.P.; Shishkina, E.A.; Romanyukha, A.A.; Wieser, A.; Jacob, P. Strontium metabolism in teeth and enamel dose assessment: Analysis of the Techa River data. *Radiat. Environ. Biophys.* 39:161–171; 2000.

72. Tolstykh, E.I.; Degteva, M.O.; Shagina, N.B.; Kozheurov, V.P.; Repin, V.S.; Novak, N.Yu.; Berkovski, V.; Noßke, D. Biokinetic models for strontium: Estimation of reliability for the late period after intake. *Intl. J. Radiat. Med.* 3:133 (in English) and 301 (in Russian); 2001.

73. Tolstykh, E.I.; Degteva, M.O.; Peremislova, L.M.; Vorobiova, M.I.; Kozheurov, V.P. Dietary intake and 90Sr contents in the residents of the East Urals Radioactive Trace. Forty-year study experience. *Intl. J. Radiat. Med.* 3:134 (in English) and 300 (in Russian); 2001.

74. Tolstykh, E.I.; Degteva, M.O.; Vorobiova, M.I.; Kozheurov, V.P. Fetal dose assessment for the offspring of the Techa Riverside residents. *Radiat. Environ. Biophys.* 40:279–286; 2001.

75. Tolstykh, E.I.; Degteva, M.O.; Vorobiova, M.I.; Kozheurov, V.P.; Peremislova, L.M. Dietary intake and 90Sr body contents in the residents of the Eastern Urals Radioactive Trace. Experience in the forty-year monitoring. *Intl. J. Radiat. Med.* 4:127–133; 2002 (in English and Russian).

76. Tolstykh, E.I.; Degteva, M.O.; Shagina, N.B.; Kozheurov, V.P.; Repin, V.S.; Berkovski, V.; Noßke, D. Biokinetic models for strontium: Estimation of reliability for late period after intake. *Intl. J. Radiat. Med.* 4:134–143; 2002 (in English and Russian).

77. Tolstykh, E.I.; Shishkina, E.A.; Degteva, M.O.; Ivanov, D.V.; Bayankin, S.N.; Anspaugh, L.R.; Napier, B.A.; Wieser, A.; Jacob, P. Age dependencies of 90Sr incorporation in dental tissues: Comparative analysis and interpretation of different kinds of measurements obtained for residents on the Techa River. *Health Phys.* 85:409–419; 2003.

78. Tolstykh, E.I.; Tokareva, E.E.; Peremyslova, L.M.; Degteva, M.O. Mineral content in different bones of the skeleton of Urals residents as a function of gender and age. *Morphol.* 125:72–75; 2004 (in Russian).

79. Tolstykh, E.I.; Peremyslova, L.M.; Shagina, N.B.; Degteva, M.O.; Vorobiova, M.I.; Tokareva, E.E.; Safronova, N.G. Characteristics of 90Sr accumulation and elimination for residents of the Urals region in 1957−1988. *Radiat. Biol. Radioecol.* 45:495−504; 2005 (in Russian).

80. Tolstykh, E.I.; Degteva, M.O.; Peremyslova, L.M.; Shagina, N.B.; Zalyapin, V.I.; Krivoschapov, V.A.; Anspaugh, L.R.; Napier, B.A. Reconstruction of long-lived radionuclide intakes for Techa Riverside residents. Part 1. Strontium-90. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) Special issue 1:45−67; 2006 (in Russian).

81. Tolstykh, E.I.; Degteva, M.O.; Vorobiova, M.I.; Peremyslova, L.M.; Shagina, N.B.; Anspaugh, L.R.; Napier, B.A. Reconstruction of long-lived radionuclide intakes for Techa Riverside residents. Part 2. Cesium-137. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) Special issue 1:68−79; 2006 (in Russian).

82. Tolstykh, E.I.; Degteva, M.O.; Shishkina, E.A.; Zalyapin, V.I.; Krivoshchapov, V.A. Possibility of using human teeth for retrospective dosimetry: analysis of the Techa river data. *Radiat. Prot. Dosim.* 127:511−515; 2007.

83. Tolstykh, E.I.; Shagina, N.B.; Peremyslova, L.M.; Degteva, M.O.; Phipps, A.W.; Harrison, J.D.; Fell, T.P. Reconstruction of ^{90}Sr intake for breast-fed infants in the Techa riverside settlements. *Radiat. Environ. Biophys.* 47:349−357; 2008.

84. Tolstykh, E.I.; Shagina, N.B.; Peremyslova, L.M.; Degteva, M.O. Secular trend in bone mineral content in humans: Analysis of data from the Ural region. *Morphol.* 137:65–70; 2010 (in Russian).

85. Tolstykh, E.I.; Peremyslova, L.M.; Shagina, N.B.; Degteva, M.O. ^{90}Sr in residents of the Iset Riverside settlements. *Radiat. Biol. Radioecol.* 50:90–97; 2010 (in Russian).

86. Tolstykh, E.I.; Shagina, N.B.; Peremyslova, L.M.; Degteva, M.O. Bone mineral density in residents who lived on radioactive territories of the Chelyabinsk region. *Radiat. Biol. Radioecol.* 50:481–491; 2010 (in Russian).

87. Tolstykh, E.I.; Shagina, N.B.; Peremyslova, L.M.; Degteva, M.O. Bone mineral density in residents who lived on radioactive territories of Chelyabinsk region. *Biophys.* 56:148–156; 2011.

88. Tolstykh, E.I.; Degteva, M.O.; Peremyslova, L.M.; Shagina, N.B.; Shishkina, E.A.; Krivoshchapov, V.A.; Anspaugh, L.R.; Napier, B.A. Reconstruction of long-lived radionuclide intakes for Techa Riverside residents: Strontium-90. *Health Phys.* 101:28–47; 2011.

89. Tolstykh, E.I.; Shagina, N.B.; Degteva, M.O.; Anspaugh, L.R.; Napier, BA. Does the cortical bone resorption rate change due to ^{90}Sr-radiation exposure? Analysis of data from Techa Riverside residents. *Radiat. Environ. Biophys.* 50:417–430; 2011.

90. Trapeznikov, A.V.; Molchanova, I.V.; Karavaeva, E.N.; Peremyslova, L.M.; Mikhajlovskaya, L.N.; Popova, I.Ya.; Nikolkin, V.N.; Vorobiova, M.I.; Trapeznikova, V.N.; Kostychenko, V.A.; Korzhavin, A.V. Results of long-term radioecological studies of the Techa River. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) 2007(3):36–49 (in Russian).

91. Veronese, I.; Shved, V.; Shishkina, E.A.; Giussani, A.; Göksu, H.Y. Study of dose rate profile at sample disks in a Risø OSL single-grain attachment system. *Radiat. Meas.* 42:138–143; 2007.

92. Veronese, I.; Fattibene, P.; Cantone, M.C.; De Coste, V.; Giussani, A.; Onori, S.; Shishkina, E.A. EPR and TL-based beta dosimetry measurements in various tooth components contaminated by ^{90}Sr. *Radiat. Meas.* 43:813–818; 2008.

93. Volchkova, A.Y.; Chuvakova, D.A.; Shishkina, E.A. Calculations of tooth enamel doses from internal exposure based on a set of voxel phantoms by example of the 1st low incisor. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) 2009(6):66–75 (in Russian).

94. Volchkova, A.; Shishkina, E.A.; Ivanov, D.V.; Timofeev, Yu,; Fattibene, P,; Wieser, A.; Degteva, M.O. Harmonization of dosimetric information obtained by different EPR methods: Experience of Techa River study. *Radiat. Meas.* 46:801–807; 2011.

95. Vorobiova, M.I.; Degteva, M.O.; Burmistrov, D.S.; Safronova, N.G.; Kozheurov, V.P.; Anspaugh, L.R.; Napier, BA. Review of historical monitoring data on Techa River contamination. *Health Phys.* 76:605–618; 1999.

96. Vorobiova, M.I.; Degteva, M.O. Simple model for the reconstruction of radionuclide concentrations and radiation exposures along the Techa River. *Health Phys*. 77:142–149; 1999.

97. Vozilova, A.V.; Shagina, N.B.; Degteva, M.O.; Edwards, A.A.; Ainsbury, E.A.; Moquet, J.E.; Hone, P.; Lloyd, D.C.; Fomina, J.N.; Darroudi, F. Preliminary FISH-based assessment of external dose for residents exposed on the Techa River. *Radiat. Res.* 177:84-91; 2012.

98. Wieser, A.; Romanyukha, A.A.; Degteva, M.O.; Kozheurov, V.P.; Petzold, G. Tooth enamel as a natural beta dosimeter for bone seeking radionuclides. *Radiat. Prot. Dosim.* 65:413–416; 1996.

99. Wieser, A.; Fattibene, P.; Shishkina, E.A.; Ivanov, D.V.; De Coste, V.; Guttler, A.; Onori, S. Assessment of performance parameters for EPR dosimetry with tooth enamel. *Radiat. Meas.* 43:731–736; 2008.

100. Woda, C.; Ulanovsky, A.; Bougrov, N.G.; Fiedler, I.; Degteva, M.O.; Jacob, P. Luminescence dosimetry in a contaminated settlement of the Techa River Valley, Southern Urals, Russia. *Radiat. Meas.* 46:277–285; 2011.

101. Woda, C.; Ulanovsky, A.; Bougrov, N.G.; Fiedler, I.; Degteva, M.O.; Jacob, P. Potential and limitations of the 210°C TL peak in quartz for retrospective dosimetry. *Radiat. Meas.* 46:485-493; 2011.

102. Zalyapin, V.I.; Krivoshchapov, V.A. Numerical analysis of one inverse problem of applied biophysics. *Bull. Southern Urals State University*, Series 2 on Mathematics, Physics, and Chemistry 2002(3):3–11 (in Russian).

103. Zalyapin, V.I.; Krivohchapov, V.A.; Degteva, M.O. Numerical analysis of an applied biophysics inverse problem. *Inverse Prob. Science Engin.* 12:379–392; 2004.

104. Zalyapin, V.I.; Shishkina, E.A.; Fattibene, P.; Wieser, A.; Ivanov, D.V.; Degteva, M.O. Statistical analysis of the EPR measurements. *Bull. Southern Urals State University*, Series 2 on Mathematical Modeling and Programming 2008(27):36–44 (in Russian).

105. Zalyapin, V.I.; Shishkina, E.A. On the linearity of a statistical model for the EPR-response to the ionizing radiation in dosimetric studies of tooth enamel. *Bull. Southern Urals State University, Series 5 on Mathematical Modeling and Programming* 2010(16):17–22 (in Russian).

Project 1.2a: Data Preservation at URCRM (1)

1. Startsev, N.V.; Shalonin, D.G.; Cragle, D.; Klein, A.; Akleyev, A.V. Approach to physical preservation of archival records accumulated at the Urals Research Center for Radiation Medicine. *Med. Radiology and Radiation Safety* 6:107–112; 2001 (in Russian).

Project 1.2b: Techa River Population Morbidity (28)

1. Akleyev, A.V.; Kossenko, M.M.; Silkina, L.A.; Degteva, M.O. Clinical-epidemiological basis for identification of exposed population groups at high risk of cancer development. *Radiation and Risk* 5:163–182; 1995 (in Russian).

2. Akleyev, A.V.; Kossenko, M.M.; Silkina, L.A.; Degteva, M.O.; Yachmenyov, V.A.; Awa, A.; Akiyama, M.; Veremeyeva, G.A.; Voziliva, A.V.; Kyazumi, S.; Kozheurov, V.P.; Vyushkova, O.V. Health effects of radiation incidents in the Southern Urals. *Stem Cells* 13:58–68; 1995.

3. Akleyev, A.V.; Zhidkova, C. The Chelyabinsk data base: current Russian legislation on database and intellectual property and its implications for international scientific collaboration. *Health Phys.* 71:58–60; 1996.

4. Akleyev, A.V.; Kossenko, M.M.; Startsev, N.V. Techa River population: long-term medical follow-up. *British Journal of Radiology*, Supplement 26:32–40; 2002.

5. Akleyev, A.V.; Krestinina, L.Yu.; Preston, D. Carcinogenic effects of protracted radiation exposure among residents of the Techa river villages. *International Journal of Cancer* Suppl. 13:127–128; 2002.

6. Akleyev, A.V.; Preston, D.; Krestinina, L.Yu. Medical-biological effects of chronic radiation exposure in man. *Occupational Medicine and Industrial Ecology* 3:30–36; 2004 (in Russian).

7. Akleyev, A.; Davis, F., Krestinina, L., Preston D. The Techa River Cancer Incidence subcohort: description and preliminary follow-up results. In *Proceedings of the 11th International Congress of the IRPA*, Madrid, 23–28 May, 2004. Session 1b1. http://irpa11.irpa.net

8. Akleyev, A.V.; Krestinina, L.Y.; Preston, D.; Davis, F.; Degteva, M.O.; Anspaugh, L.; Startsev, N.V.; Napier, B.; Ron, E. Radiogenic risk of malignant neoplasms for Techa riverside residents. *Medical radiology and radiation safety (Meditsinskaya Radiologiia I Radiatsionnaia Bezopasnost)* 53(6):5-26; 2008 (in English) and 53(4):13-37; 2008 (in Russian).

9. Burmistrov, D.; Kossenko, M.; Wilson, R. Radioactive contamination of the Techa River and its effects. *Technology* 7:553–575; 2000.

10. Ilyin, L.A.; Akleyev, A.V.; Romanov, S.A. Progress in radiobiology research and radiation medicine achieved by institutes within the system of Federal Medical and Biological Agency of Russia. *Emergency Medicine* 21:68–82; 2007 (in Russian).

11. Kossenko, M.M. Cancer mortality in the exposed population of the Techa River area. *World Health Stat. Q*. 49:17–21; 1996.

12. Kossenko, M.M. Cancer mortality among Techa river residents and their offspring. *Health Phys*. 71:77–82; 1996.

13. Kossenko, M.M.; Degteva, M.O.; Vyushkova, O.V.; Preston, D.L.; Mabuchi, K.; Kozheurov, V.P. Issues in the comparison of risk estimates for the population in the Techa River Region and Atomic Bomb Survivors. *Radiat. Res*. 148:54–63; 1997.

14. Kossenko, M.M.; Degtyaryova, R.G.; Petrushova, N.A. Clinical and epidemiological characteristics of leukemia cases among population exposed to chronic irradiation. *Hematology and Transfusiology* 42:27–31; 1997 (in Russian).

15. Kossenko, M.M.; Akleyev, A.V.; Startsev, N.A.; Degteva, M.O. Epidemiological analysis of remote carcinogenic effects on populations with chronic exposure to radiation in the Urals region. *Int. J. Radiat. Med.* 2:34–41; 1999.

16. Kossenko, M.M.; Hoffman, D.A.; Thomas, T.L. Stochastic effects of environmental radiation exposure in populations living near the Mayak Industrial Association: preliminary report on study of cancer morbidity. *Health Phys*. 79:55–62; 2000.

17. Kossenko, M.M.; Ostroumova, E.V.; Krestinina, L.Yu.; Vyushkova, O.V.; Epifanova, O.V.; Gudkova, N.V.; Thomas, T.L.; Hoffman, D.A.; Preston, D.L.; Akleyev, A.V. Analysis of Cancer morbidity among the exposed residents of the Techa riverside villages. *Meditsinskaia Radiologiya i Radiatsionnaya Bezopasnost* (Medical Radiology and Radiation Safety), V. 46, *№*6 Moscow: Radekon, 2001 (in Russian).

18. Kossenko, M.M.; Preston, D.L.; Krestinina, L.Y.; Degteva, M.O.; Startsev, N.V.; Thomas, T.L.; Vyushkova, O.V.; Anspaugh, L.R.; Napier, B.A.; Kozheurov, V.P.; Ron, E.; Akleyev, A.V. Studies on the extended Techa River cohort: cancer risk estimation. *Radiat. Environ. Biophys.* 41:45–48; 2002.

19. Kossenko, M.M.; Akleyev, A.V.; Krestinina, L.Yu.; Startsev, N.V.; Zhidkova, C.; Hoffman, D.A.; Thomas, T.L.; Preston, D. Methods for following-up a cohort of people exposed on the Techa River. *Siberian Medical Journal* 18:40–49; 2003 (in Russian).

20. Kossenko, M.M.; Thomas, T.L.; Akleyev, A.V.; Krestinina, L.Y.; Startsev, N.V.; Vyushkova, O.V.; Zhidkova, C.M.; Hoffman, D.A.; Preston, D.L.; Davis, F.; Ron, E. The Techa River Cohort: Study Design and Follow-up Methods. http://www.bioone.org/bioone/?request=get-abstract&doi=10.1043/0033-7587(2005)164[0591:TTRCSD]2.0.CO;2. *Radiat. Res.* 164:591–601; 2005.

21. Krestinina, L.Yu.; Preston, D.; Ostroumova, E.V.; Ron, E.; Vyushokova, O.V.; Akleyev, A.V. Cancer mortality in a cohort of people exposed on the Techa River: preliminary risk estimation. *Siberian Medical Journal* 2:52–62; 2005 (in Russian).

22. Krestinina, L.Y.; Preston, D.L.; Ostroumova, E.V.; Degteva, M.O.; Ron, E.; Vyushokova, O.V.; Startsev, N.V.; Kossenko, M.M., Akleyev, A.V. Protracted Radiation Exposure and Cancer Mortality in the Techa River Cohort. http://www.bioone.org/bioone/?request=get-abstract&doi=10.1043/0033-7587(2005)164[0602:PREACM]2.0.CO;2. *Radiat. Res.* 164:602–611; 2005.

23. Krestinina, L.Y.; Davis F.; Ostroumova, E.V.; Epifanova, S.B.; Degteva, M.O.; Preston, D.L.; Akleyev, A.V. Solid cancer incidence and low-dose-rate radiation exposures in the Techa River cohort: 1956–2002. http://ije.oxfordjournals.org/cgi/reprint/dym121?ijkey=SfOmBABjefzUDBW&keytype=ref *International Journal of Epidemiology* 36:1038–1046; 2007.

24. Krestinina L.; Preston, D.L.; Davis, F.G.; Epifanova, S.; Ostroumova, E.; Ron, E; Akleyev, A. Leukemia incidence among people exposed to chronic radiation from the contaminated Techa River, 1953–2005. http://www.springerlink.com/content/418l260l71378717/fulltext.pdf *Radiat. Environ. Biophys.* Electronic publication ahead of print. DOI 10.1007/s00411-009-0257-5; 2009.

25. Krestinina, E.Yu.; Epifanova, S.B.; Silkin, S.; Mikryukova, L.; Degteva, M.O.; Shagina, N.B.; Akleyev, A.V. Chronic low-dose exposure in the Techa River cohort: risk of mortality from circulatory diseases. *Radiat. Environ. Biophys.* DOI 10.1007/s00411-012-0438-5; 2012.

26. Ostroumova, E.; Preston, D.L.; Ron, E.; Krestinina, L.; Davis, F.G.; Kossenko, M.; Akleyev, A. Breast cancer incidence following low-dose rate environmental exposure: Techa River Cohort, 1956–2004. *Brit. J. Cancer* 99:1940–1945; 2008.

27. Preston, D.L.; Krestinina, L.Y.; Sokolnikov, M.E.; Ron, E.; Davis, F.G.; Ostroumova, E.V.; Gilbert, E.S. How much can we say about site-specific cancer radiation risks? *Radiat. Res*. 174:816-24; 2010.

28. Segerstahl, B.; Akleyev, A.V.; Novikov, V. The long shadow of Soviet plutonium production. *Environment* 39:12–20; 1997.

Project 1.4: Reconstruction of Dose to Residents of Ozersk from Mayak Operations (8)

1. Glagolenko, Yu.V.; Drozhko, E.G.; Mokrov, Yu.G.; Rovny, S.I.; Stukalov, P.M.; Lyzhkov, A.V.; Alexandrova, O.N. Assessment of effective cooling period for irradiated uranium in reactor "A" storage pool in 1948–1954. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) 2006(3):75–79 (in Russian).

2. Report of the First Central Directorate Committee under the Guidance of Alexandrov, A.P. Concerning Contamination of the Territory Adjacent to Mendeleev

Plant (1951). *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) 2006(3): 60–74 (in Russian).

3. Glagolenko, Yu.V.; Drozhko, E.G.; Mokrov, Yu.G.; Pyatin, N.P.; Rovny, S.I.; Anspaugh, L.R.; Napier, B.A. Methods and results of reconstruction of noble gas releases from the stacks of the Mayak PA graphite reactors over the whole period of their operation. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) Special Issue: 5–19; 2008.

4. Glagolenko, Yu.V.; Drozhko, E.G.; Mokrov, Yu.G.; Rovny, S.I.; Beregich, D.A.; Stukalov, P.M.; Ivanov, I.A.; Alexakhin, A.I.; Anspaugh, L.R.; Napier, B.A. Reconstruction of external doses to Ozyorsk residents due to atmospheric releases of inert radioactive gases from the stacks of the "Mayak PA" reactor production from 1948 to 1989. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) Special Issue: 20–31; 2008.

5. Glagolenko, Yu.V.; Drozhko, E.G.; Mokrov, Yu.G.; Rovny, S.I.; Lyzhkov, A.V.; Anspaugh, L.R.; Napier, B.A. Methods for reconstruction of radionuclide composition and activity of fission products accumulated in the irradiated uranium at the moment of its radiochemical reprocessing at Plant "B", "Mayak" PA in the early 1950s. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) Special Issue: 32–47; 2008.

6. Glagolenko, Yu.V.; Drozhko, E.G.; Mokrov, Yu.G.; Pyatin, N.P.; Rovny, S.I.; Anspaugh, L.R.; Napier, B.A. Reconstruction of ^{131}I releases from stacks of the radiochemical plant of the Mayak Production Association for the period from 1948 to 1967. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) Special Issue: 48–57; 2008.

7. Mokrov, Yu.G.; Martyushov, V.Z.; Stukalov, P.M.; Ivanov, I.A.; Beregich, D.A.; Anspaugh, L.R.; Napier, B.A. Food consumption patterns of the Ozyorsk population in 1948–1966, important for estimating per oral component of internal exposure doses. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) Special Issue: 58–71; 2008.

8. Mokrov, Yu.G.; Aleksakhin, A.I. Estimation of internal exposure doses resulting from ^{239}Pu, ^{90}Sr and ^{137}Cs intake into body for Ozyorsk residents for the period of 1948–2008. *Radiat. Safety Problems* (Mayak Production Association Scientific Journal) 2010(2): 48–57 (in Russian).

Project 2.2: Mayak Worker Epidemiology (8)

1. Gilbert, E.S.; Koshurnikova, N.A.; Sokolnikov, M.; Khokhryakov, V.F.; Miller, S.; Preston, D.L.; et al: Liver Cancers in Mayak Workers. *Radiat. Res.* 154:246–252; 2000.

2. Gilbert, E.S.; Koshurnikova, N.A.; Sokolnikov, M.E.; Shilnikova, N.S.; Preston, D.L.; Ron, E.; Khokhryakov, V.F.; Vasilenko, E.K.; Miller, S.; Eckerman, K.; Romanov, S.A. Lung cancers in Mayak workers. *Radiat. Res.* 162:505–516; 2004.

3. Koshurnikova, N.A.; Gilbert, E.S.; Sokolnikov. M.; Khokhryakov, V.F.; Miller, S.; Preston, D.L.; et al: Bone Cancers in Mayak Workers. *Radiat. Res.* 154:237–245; 2000.

4. Koshurnikova, N.A.; Gilbert, E.S.; Shilnikova, N.S.; Sokolnikov, M.; Preston, D.L.; Kreisheimer, M.; Ron, E.; Kellerer, A.M.; Okatenko, P.; Romanov, S.A. Studies on the Mayak nuclear workers: health effects. *Radiation and Environmental Biophysics* 41:29–31; 2002.

5. Shilnikova, N.A.; Preston, D.L.; Ron, E.; Gilbert, E.S.; Vasilenko, E.K.; Romanov, S.A.; Kuznetsova, I.S.; Sokolnikov, M.E.; Okatenko, P.V.; Kreslov, V.V.; Koshurnikova, N.A. Cancer mortality risk among workers at the Mayak nuclear complex. *Radiat. Res.* 159:787–798; 2003.

6. Koshurnikova, N.A.; Shilnikova, N.S.; Sokolnikov, M.E.; Bolotnikova, M.G.; Okatenko, P.V.; Kuznetsova, I.S. Medical-Dosimetry registry of workers at the "Mayak" production association. *International Journal of Low Radiation* 2:236–242; 2006.

7. Preston, D.L.; Krestinina, L.Y.; Sokolnikov, M.A.; Ron, E.; Davis, F.G.; Ostroumova, E.V.; Gilbert, E.S. How much can we say about site-specific cancer risk estimates? *Radiat. Res.*174:816-824, 2010.

8. Sokolnikov, M.E.; Gilbert, E.S.; Preston, D.L.; Ron, E.; Shilnikova, N.S.; Khokhryakov, V.V.; Vasilenko, E.K.; Koshurnikova, N.A. Lung, liver, and bone cancer mortality in Mayak workers. *International Journal of Cancer* 123:905–911; 2008.

Project 2.4: Mayak Worker Dosimetry (56)

1. Bailey, B.R.; Eckerman, K.F.; Townsend, L.W. An analysis of a puncture wound case with medical intervention. *Radiat. Prot. Dosim.* 105:509–512; 2003.

2. Bess, J.D., Krahenbuhl, M.P., Miller, S.C., Khokhryakov, V.V., Khokhryakov, V.F., Suslova, K.G., Vostrotin, V.V. Uncertainties analysis for the plutonium dosimetry model, doses 2005, using Mayak bioassay data. *Health Phys.* 93:207–219; 2007.

3. Choe, D.O.; Shelkey, B.N.; Wilde, J.L.; Walk, H.A.; Slaughter D.A. Calculated organ doses for Mayak production association central hall using ICRP and MCNP. *Health Phys.* 84:317–321; 2003.

4. Ilyin, L.A.; Kiselev, M.F.; Panfilov, A.P.; Kochetkov, O.A.; Ivanov, A.A.; Grinev, M.P.; Soloviev, V.Yu.; Semenov, V.G.; Tukov, A.R.; Romanov, S.A.; Koshurnikova, N.A.; Khokhryakov, V.F.; Kuznetsova, I.S. Medical dosimetric registry of Russian atomic industry employees: current status and perspectives. *Int. J. of Low Radiation* 2:207–218; 2006.

5. Jacob, P.; Meckbach, R.; Sokolnikov, M.; Khokhryakov, V.V.; Vasilenko, E. Lung cancer risk of Mayak workers: modeling of carcinogenesis and bystander effect. *Radiat. Environ Biophys.* 46:383–394, 2007.

6. Khokhryakov, V.F.; Kellerer, A.M.; Kreisheimer, M.; Romanov, S.A... Lung Cancer in Nuclear Workers of Mayak. A Comparison of Numerical Procedures. *Radiat. Environ. Biophys.* 37:11–17; 1998.

7. Khokhryakov, V.; Suslova, K.; Aladova, E.; Vasilenko, E.; Miller, S.C.; Slaughter, D.M.; Krahenbuhl, M.P. Development of an improved dosimetry system for the workers at the Mayak Production Association. *Health Phys*. 79:72–76; 2000.

8. Khokhryakov, V.; Suslova, K.; Romanov, S.; Vostrotin, V. Pulmonary Clearance of Industrial Plutonium Compounds in remote Period after the Beginning of Inhalation. *Medical Radiology and Radiation Protection* 2:28–34; 2000.

9. Khokhryakov, V.F.; Suslova, K.G.; Vostrotin, V.V.; Romanov, S.A.; Menshikh, Z.S.; Kudryavtseva, T.I.; Miller, S.C.; Krahenbuhl, M.P.; Filipy, R.E. The development of the plutonium lung clearance model for exposure estimation of the Mayak PA, nuclear plant workers. *Health Phys.* 82:425–431; 2002.

10. Khokhryakov, V.F.; Chernikov, V.I.; Efimov, A.E. The use of scintillation body counter for monitoring of actinide accumulation among Mayak PA personnel. *Radiation Safety* (Special issue) 64–70, 2003 (article in Russian).

11. Khokhryakov, V.F.; Kudryavtseva ,T.I.; Schadilov, A.E.; Shalaginov, A.I. Successful DTPA therapy in the case of 239Pu penetration via injured skin exposed to nitric acid. *Radiat. Prot. Dosim.* 105:499–502; 2003.

12. Khokhryakov, V.F.; Vasilenko, E.K. Dosimetry register of Mayak PA personnel – one of the major world information sources for solution of fundamental radiation safety problems. *Radiation Safety Problems* (Special Issue) 36–40; 2003 (article in Russian).

13. Khokhryakov, V.F. "Doses-1999, 2000" are serial improvements of plutonium dosimetry for Mayak PA workers. *Radiation Safety Problems* 1:71– 82; 2004 (article in Russian).

14. Khokhryakov, V.F.; Suslova, K.G.; Kudravtseva, T.I.; Schadilov, A.E.; Vostrotin, V.V.; Lagounova, N.Y.; Barabanshchikova, A.Y. Precision of equations for systemic Pu excretion based on new data on nuclide removing with urine and feces at late times after inhalation. *Medical Radiology and Radiation Safety* 4:12–20; 2004 (article in Russian).

15. Khokhryakov, V.F.; Suslova, K.G.; Kudryavtseva, T.I.; Schadilov, A.E.; Vostrotin, V.V.; Lagounova, N.Yu.; Barabanshchikova, A.Yu. Relative role of plutonium excretion with urine and feces from the human body. *Health Phys.* 86:523–527; 2004.

16. Khokhryakov, V.F.; Suslova, K.G.; Vostrotin, V.V.; Romanov, S.A.; Eckerman, K.F.; Krahenbuhl, M.P.; Miller, S.C. Adaptation of the ICRP Publication 66 respiratory tract

model to data on plutonium biokinetics for Mayak workers. *Health Phys*. 88:125–132; 2005.

17. Khokhryakov, V.F. Graphical method for assessment of doses and level accumulation based on urine excretion data. *Medical Radiology and Radiation Safety* 5:5–14; 2005 (in Russian).

18. Khokhryakov, V.F.; Khokhryakov, V.F.; Suslova, K.G.; Efimov, A.V.; Vostrotin, V.V., Schadilov, A.E. Status and prospects of internal dosimetry for the Mayak nuclear workers. *Int. J. of Low Radiation* 2:219–235; 2006.

19. Khokhryakov, V.F, ; Khokhryakov, V.V. ; Suslova, K.G.; Vostrotin, V.V. ; Schadilov, A.E.; Sokolova, A.B.; Efimov, A.V. ; Krahenbuhl, M.P.; Miller, S.C.; Eckerman, K.F.; Leggett, R.W.. Progress in plutonium dosimetry development at Mayak PA. *Radiation Safety Problems* 1:58–79; 2006 (article in Russian).

20. Khokhryakov, V.F.; Khokhryakov, V.V. Physical-chemical mechanisms of dissolution of aerosols containing Pu dioxide. *Radiation Safety Issues* 3:47-59; 2008 (in Russian).

21. Khokhryakov, V.V.; Efimov, A.V. Experience in application of whole body counting technique to control 241Am body burden in the Mayak PA workers. *Radiation Safety Issue* 1:57–70; 2004 (article in Russian).

22. Khokhryakov, V.V.; Lagunova, N.Yu.; Sypko, S.A.; Rumyantseva, E.Yu. Investigation on effects of the dispersed composition of industrial aerosols on plutonium dialysis kinetics. *Siberian Medical Journal* 2:99–104; 2005 (in Russian).

23. Khokhryakov, V.V.; Efimov, A.V. Americium-241 as the factor of internal exposure to Mayak PA workers. *Radiation Safety Problems* 1: 94–104; 2006 (article in Russian).

24. Khokhryakov, V.V, ; Khokhryakov, V.F. ; Suslova, K.G.; Sokolova, A.B. Time history analysis for isotopic composition of actinides inhaled by Mayak PA workers during 1949–2000. *Radiation Safety Journal* 3:58–65; 2007 (article in Russian)

25. Krahenbuhl, M.P.; Slaughter, D.M.; Wilde, J.L.; Bess, J.D.; Miller, S.C.; Khokhryakov, V.K.; Suslova, K.G.; Vostrotin, V.V.; Romanov, S.A.; Menshikh, Z.S.; Kudryavtseva, T.I. The historical and current application of the FIB-1 model to assess organ dose from plutonium intakes in Mayak workers. *Health Phys.* 82:445–45; 2002.

26. Krahenbuhl, M.P.; Bess, J.D.; Wilde, J.L.; Vostrotin, V.V.; Suslova, K.G.; Khokhryakov, V.F.; Slaughter, D.M.; Miller, S.C. Uncertainties analysis of doses resulting from chronic inhalation of plutonium at the Mayak Production Association. *Health Phys.* 89:33–45; 2005.

27. Kreisheimer, M.E.; Sokolnikov, M.E.; Koshurnikova, N.A.; Khokhryakov, V.F.; Romanov, S.A.; Shilnikova, N.S.; Okatenko, P.V.; Nekolla, E.A.; Kellerer, A.M. Lung cancer mortality among nuclear workers of the Mayak facilities in the former Soviet Union. *Radiat. Environ. Biophys*. 42:120–135; 2003.

28. Kudryavtseva, T.I.; Sokolova, A.B. Macrodistribution of Pu industrial compounds in human lung. *Radiation Safety Problems* 3:41–48; 2005 (in Russian).

29. Leggett, R.W. Reliability of the ICRP's dose coefficients for members of the public. III. Plutonium as a case study of uncertainties in the systemic biokinetics of radionuclides. *Radiation Protection Dosimetry* 106:103–120; 2003.

30. Leggett, R.W.; Eckerman, K.F.; Khokhryakov, V.F.; Suslova, K.G.; Krahenbuhl, M.P.; Miller, S.C. Mayak worker study: An improved biokinetic model for reconstructing doses from internally deposited plutonium. *Radiat. Res.* 164:111–122; 2005.

31. Levkina E.V.; Romanov, S.A.; Miller, S.C.; Krahenbuhl, M.P.; Belosokhov, M.V. Quantitative plutonium microdistribution in bone tissue of vertebra from occupationally exposed worker. *Radiat. Biol. Radioecol.* 48:356-363; 2008 (in Russian).

32. Lyovkina, Y.V.; Miller, S.C.; Romanov, S.A.; Krahenbuhl, M.P.; Belosokhov, M.V. Quantitative plutonium microdistribution in bone tissue of vertebra from a Mayak worker. *Health Phys.* 99:464-470; 2010. PMCID:PMC2941237.

33. Miller, S.C. Radionuclide-induced skeletal cancers. *J. Musculoskel. Neuron. Interact.* 2:552–553; 2002.

34. Miller, S.C.; Lloyd, R.D.; Bruenger, F.W.; Krahenbuhl, M.P.; Polig, E.; Romanov, S.A. Comparisons of the skeletal locations of putative plutonium-induced osteosarcomas in humans with those in Beagle dogs and with naturally-occurring tumors in both species. *Radiation Research* 160:517–523; 2003.

35. Okladnikova, N.D.; Khokhryakov, V.V.; Shevkunov, V.A.; Pesternikova, V.C. 239Pu: clinico-cytogenetic description of high-incorporation case. (24 years of observations). *Radiation Biology and Radioecology* 44:415–419; 2004 (article in Russian).

36. Okladnikova, N.D.; Scott, B.R.; Tokarskaya, Z.B.; Zhuntova, G.V.; Khokhryakov, V.F.; Syrchicov, V.A.; Grigoryeva, E.S. Chromosomal aberrations in lymphocytes of peripheral blood among Mayak facility workers who inhaled insoluble forms of 239Pu. *Radiat. Prot. Dosimetry* 113:3–13, 2005.

37. Romanov, S.A.; Vasilenko, E.K.; Khokhryakov, V.F.; Jacob, P. Studies on the Mayak nuclear workers: dosimetry. *Radiat. Environ. Biophys.* 41:23–28, 2002.

38. Romanov, S.A,; Guilmette, R.A.; Khokhryakov, V.F.; Phipps, A.; Aladova, E.E.; Bertelli, L.; Birchall, A.; Eckerman, K.F.; Khokhryakov, V.V.; Krahenbuhl, M.P.; Leggett, R.W.; Little, T.T.; Miller, G.; Miller, S.C.; Riddell, A.; Suslova, K.G.; Vostrotin, V.V.; Zaytseva, Y.V. Comparison of dose estimation from occupational exposure to ^{239}Pu using different modeling approaches. *Radiat. Prot. Dosim.* 127:486–490; 2007.

39. Schadilov, A.E.; Khokhryakov, V.F.; Kudravtseva, T.I.; Vostrotin, V.V. "DTPA effects on plutonium excretion from human body". *Siberian Medical Journal* 2:128–132; 2005 (in Russian).

40. Smetanin, M.Yu.; Vasilenko, E.K.; Lyubarskaya, I.V.; Knyazev, V.A.; Gorelov, M.V.; Scherpelz, R.I.; Fix, J.J. Calculation Experimental Studies of Energy and Angular Response of the Film Dosimeters used at the Mayak PA. *Radiation Safety Problems* 4:46–59; 2006 (*in Russian*).

41. Smetanin, M; Vasilenko, E.K., Lyubarskaya, I.; Knyazev, V.; Gorelov, M.; Scherpelz, R.I.,; Fix, J.J. Mayak film dosimeter response studies, part II: response models. *Health Phys.* 93:231–238, 2007.

42. Smetanin M, Vasilenko EK, Scherpelz RI. Mayak film dosimeter response studies, part iii: application to worker dose assessment. *Health Phys.* 93:239–244, 2007.

43. Sokolnikov, M.E.; Khokhryakov, V.F.; Vasilenko, E.K.; Koshurnikova, N.A. Risk of lung cancer development in the personnel exposed to internal radiation as a result of incorporated Pu. *Siberian Medical Journal* 5:31–36; 2003 (in Russian).

44. Strom, D.J.; Joyce, K.E.; Maclellan, J.A.; Watson, D.J.; Lynch, T.P.; Antonio, C.L.; Birchall, A; Anderson, K.K.; Zharov, P.A. Disaggregating Measurement Uncertainty From Population Variability And Bayesian Treatment Of Uncensored Results. *Radiation Protection Dosimetry* (http://www.ncbi.nlm.nih.gov/pubmed/21693467), pp. 1-17; 2011.

45. Suslova, K.; Khokhryakov, V.; Tokarskaya, Z.; Kudryavtseva, T.; Nifatov, A. Distribution of Plutonium in Organs of Extrapulmonary Pool in Remote Periods after the Beginning of Inhalation in Workers of Radiochemical Plant. *Medical Radiology and Radiation Protection* 1:17–25; 2000.

46. Suslova, K.G.; Khokhryakov, V.F.; Tokarskaya, Z.B.; Nifatov, A.P.; Krahenbuhl, M.P.; Miller, S.C. Extrapulmonary organ distribution of plutonium in healthy workers exposed by chronic inhalation at the Mayak Production Association. *Health Physics* 82:432–444; 2002.

47. Suslova, K.G.; Khokhryakov, V.F.; Tokarskaya, Z.B.; Nifatov, A. P.; Sokolova, A.B; Miller, S.C.; Krahenbuhl, M.P. The effect of state of health on organ distribution and excretion of systemic plutonium in the Mayak workers. *Radiation Protection Dosimetry* 105:229–233; 2003.

48. Suslova, K.G.; Khokhryakov, V.F.; Nifatov, A.P.; Sokolova, A.B. Smoking and Lung Diseases as the Modifying Factors of Plutonium Distribution in the Respiratory Tract at the Late Times of Clearance in Workers of the Radiochemical Plant. *Medical Radiology and Nuclear Safety* 3:10–21; 2006 (in Russian).

49. Suslova, K.G.; Khokhryakov, V.F.; Tokarskaya, Z.B.; Nifatov, A. P.; Sokolova, A.B; Miller, S.C. and Krahenbuhl, M.P. Modifying effects of health status, physiological, and dosimetric factors on extrapulmonary organ distribution and excretion of inhaled

plutonium in workers at the Mayak Production Association. *Health Physics* 90:299–311; 2006.

50. Suslova, K.G.; Sokolova, A.B.; Krahenbuhl, M.P.; Miller, S.C. The effects of smoking and lung health on the organ retention and distribution of different plutonium compounds in the Mayak PA workers. *Radiat. Res.* 171:302-309, 2009.

51. Suslova, K.G.; Khokhryakov, V.F.; Sokolova, A.B.; Miller, S.C. Plutonium-238: A review of the biokinetics, dosimetry and implications for human exposures. *Health Phys.* 102:251-262, 2012.

52. Suslova, K.G.; Sokolova, A.B.; Khokhryakov, V.V.; Miller, S.C. 2012. Plutonium-238: Accumulation, tissue distribution and excretion in Mayak workers after exposure to plutonium aerosols. *Health Phys.* 102:243-250, 2012.

53. Vasilenko EK, Knyazev V, Gorelov M, Smetanin M, Scherpelz RI, Fix JJ. Mayak film dosimeter response studies, part I: measurements. *Health Phys.* 93:220–230; 2007.

54. Vasilenko, E.K., Khokhryakov, V.F, Miller, S.C., Fix, J.J., Eckerman, K., Choe, D.O., Gorelov, M., Khokhryakov, V., Knyazev, V., Krahenbuhl, M.P., Scherpelz, R.I., Smetanin, M., Suslova, K., Vostrotin. Mayak worker dosimetry study: An overview. *Health Physics* 93:190–206; 2007.

55. Vasilenko, E.K. Smetanin, M.Y., Miller, S.C. Slaughter, M., Jacob, P., Feherbaher, G. Approach to retrospective reconstruction of the photon exposure spectra distribution at technological sites of the Mayak Production Association. *Radiation Safety Problems* (Russian Federal Ministry of Atomic Energy) 3:42–50; 2000 (in Russian).

56. Vasilenko, E. External Dosimetry for Mayak PA Workers: Instruments, Methods, Monitoring Results, in the collection: *Radioactive Sources and Radiation Exposure Effects on the Mayak PA Workers and Population Living in the Area of Nuclear Facility Influence,* Ozersk: 46-96; 2009.

Project 2.5: Improved Plutonium Dose Assessment Methods for Mayak Workers (12)

1. Guilmette, R.A.; Romanov, S.A.; Hahn, F.F.; Nifatov, A.P.; Muksinova, K.N.; Zaytseva, Y.V. Assessing the Uniformity of Plutonium Alpha Radiation Dose in Human Lung: The Mayak Experience. *Radiation Protection Dosimetry* 99:457–461; 2002.

2. Hahn, F.F.; Romanov, S.A.; Guilmette, R.A.; Nifatov, A.P.; Zaytseva, Y.; Diel, J.H.; Allen, S.W.; Lyovkina, Y.V. Distribution of Plutonium in Particles in the Lungs of Mayak Workers. *Radiat. Protect. Dosim.* 105:81–84; 2003.

3. Hahn, F.F.; Romanov, S.A.; Guilmette, R.A.; Nifatov, A.P.; Diel, J.A.; Zaytseva, Y.V. Plutonium Microdistribution in the Lung of Mayak Workers. *Radiat. Res.* 161:568–581; 2004.

4. Miller, G.; Bertelli, L.; Guilmette, R. IMPDOS (improved dosimetry and risk assessment for plutonium-induced diseases): internal dosimetry software tools developed for the Mayak worker study. *Radiat. Prot. Dosim.* 131:308–315, 2008.

5. Miller, G.; Guilmette, R.; Bertelli, L.; Waters, R.; Romanov, S.A.; Zaytseva, Y.V. Uncertainties in internal doses calculated for Mayak workers – a study of 63 cases. *Radiat. Prot. Dosim.* 131:316–330, 2008.

6. Miller, G. Variability and uncertainty in biokinetics model parameters – the discrete empirical Bayes approximation. *Radiat. Prot. Dosim.* 131:394–398, 2008.

7. Romanov, S.A.; Hahn, F.F.; Guilmette, R.A.; Nifatov, A.P.; Muksinova, K. N.; Zaytseva, Y.V. Using a Microdosimetric Approach to Improve Dosimetry of Lung Exposure to Internally Deposited Plutonium. *Medical Radiology and Radiation Safety.* 6:58–65; 2001(in Russian).

8. Romanov, S.A.; Guilmette, R.A.; Hahn, F.F.; Nifatov, A.P.; Zaytseva, Y.V.; Lyovkina, Y.V. Improved Lung Dosimetry Using Plutonium Microdistribution Studies. *Radiat. Protect. Dosim*. 105:85–90; 2003.

9. Romanov, S.A.; Vasilenko, E.K.; Khokhryakov, V.F.; Jacob, P. Studies on the Mayak Nuclear Workers: Dosimetry. *Radiat. Environ. Biophys.* 41:23–28; 2002.

10. Romanov, S.A.; Zaytseva, Y.V. Dosimetry of Internal Exposure of Respiratory Tract to Incorporated Plutonium. *Int. J. Low Radiation* 2:257–262; 2006.

11. Romanov, S.A.; Zaytseva, Y.V.; Nifatov, A.P.; Lyovkina, Y.V.; Hahn, F.F.; Guilmette, R.A. Microdistribution of Plutonium-239 in the Lungs. *Siberian Medical Journal* 18:112–118; 2003 (in Russian).

12. Miller, G.; Vostrotin, V.; Vvedensky, V. Uncertainties of Mayak Urine Data. *Radiat. Prot. Dosim.* 133:171-176; 2009.

Project 2.6: Molecular Markers of Lung Cancer in Mayak Workers (4)

1. Belinsky, S.A.; Klinge, D.M.; Liechty, K.C.; March, T.H.; Kang, T.; Gilliland, F.D.; Sotnic, N.; Adamova, G.; Rusinova, G.; Telnov, V. Plutonium targets the p16 gene for inactivation by promoter hypermethylation in human lung adenocarcinoma. *Carcinogenesis* 25:1063–1067; 2004.

2. Lyon, C. M.; Klinge, D.M.; Liechty, K.C.; Gentry, F.D.; March, T.H.; Kang, T.; Gilliland, F.D.; Adamova, G.; Rusinova, G.; Telnov, V.; Belinsky, S.A. Radiation induced lung adenocarcinoma is associated with increased frequency of genes inactivated by promoter hypermethylation. *Radiation Res.* 168:409–414; 2007.

3. Telnov, V.I.; Rusinova, G.G.; Adamova, G.V.; Belinsky, S.A.; Crowell, R.E.; Nikula, K.J. Molecular-epidemiological study of lung cancer in workers of atomic industry. *Medical Radiology and Radiation safety* 46:94–97; 2001 (in Russian).

4. Telnov, V.I.; Belinsky, S.A.; Rusinova, G.G.; Crowell, R.E.; Sotnic, N.V.; Adamova, G.V. Molecular markers of lung cancer in atomic industry workers. *Radiation Safety Problems* 4:36–41; 2002 (in Russian).

Project 2.7: Radiation Biomarkers (5)

1. Brenner, D.J.; Okladnikova, N.; Hande, P.; Burak, L.; Geard, C.R.; Azizova, T. Biomarkers Specific to Densely Ionizing (High-LET) Radiations. *Radiat. Protec. Dosim.* 97:69–73; 2001.

2. Brenner, D.J. Comments on "Chromosome intrachanges and interchanges detected by multicolor banding in lymphocytes: Searching for clastogen signatures in the human genome." *Radiat. Res.* 162:600; 2004.

3. Hande, M.P.; Azizova, T.V.; Geard, C.R.; Burak, L.E.; Mitchell, C.R.; Khokhryakov, V.F.; Vasilenko, E.K.; Brenner, D.J. Past exposure to densely ionizing radiation leaves a unique permanent signature in the genome. *Am. J. Hum. Genet.* 72:1162–70; 2003.

4. Hande, M.P.; Azizova, T.V.; Burak, L.E.; Khokhryakov, V.F.; Geard, C.R.; Brenner, D.J. Complex Chromosome Aberrations Persist in Individuals Many Years after Occupational Exposure to Densely-Ionizing Radiation: An mFISH Study. *Genes, Chromosomes, Cancer* 44:1–9 (2005).

5. Mitchell, C.R.; Azizova, T.V.; Hande, P., Burak, L.E.; Tsakok, J.M.; Khokhryakov, V.F.; Geard, C.R.; Brenner, D.J. Stable intra-chromosomal biomarkers of past exposure to densely-ionizing radiation in several chromosomes of exposed individuals. *Radiat. Res.* 162:600; 2004.

Project 2.8: Mayak Worker Tissue Repository (31)

1. Akleyev, B.; Grosche, B.; Gusev, V.; Kiselev, M.; Kisselev, B.; Kolyado, S.; Romanov, S.; Shoikhet, Y.; Neta, R. Developing additional resources. *Radiation and Environmental Biophysics* 41:13–18; 2002.

2. Bezlepkin, V.G.; Antipova, V.N.; Belskaya, I.I.; Gulyaeva, N.A.; Zakharova, M.L.; Yezhova, A.V.; Lomaeva, M.G.; Fomenko, L.A.; Gaziev, A.I. The analysis of changes in the peripheral blood genome of people with prolonged radiation exposure, in *Achievements and problems of genetics, selection and biotechnology*, Kiev: Logos 1:406–410; 2008 (in Russian).

3. Bezlepkin,V.G.; Antipova, V.N.; Zakharova, M.L.; Lomayeva, M.G.; Oslina, D.S.; Strelkova, I.J.; Fomenko, L.A.; Muksinova, K.N.; Gaziev, A.I. Transgeneration effects of external prolonged radiation exposure in humans revealed by analysis of molecular-genetic markers variability, in International Conference: *Biological effects of low doses due to ionizing radiation and radioactive environmental contamination,* Syktyvkar: 210-212; 2009.

4. Bezlepkin, V.G.; Kirillova, E.N.; Zakharova, M.L.; Pavlova, O.S.; Lomaeva, M.G.; Fomenko, L.A.; Antipova, V.N.; Gaziev, A.I. Delayed and transgenerational molecular and genetic effects of prolonged influence of ionizing radiation in nuclear plant workers. *Journal of Radiation Biology. Radioecology* 51:20-32; 2011 (in Russian).

5. Bezlepkin, V.G.; Kirillova, E.N.; Zakharova, M.L.; Pavlova, O.S.; Lomaeva, M.G.; Fomenko, L.A.; Antipova, V.N.; Gaziev, A.I. Long-term and transgenerational molecular and genetic effects of prolonged radiation exposure in nuclear industry employees. The lessons of Chernobyl: 25 Years Later, editors: Burlakova, E.B. and Naydich, V.I. Nova Science Publishers, Hauppauge, New York. ISBN: 978-1-61324-516-3. 2011.

6. Drozdova, J.V.; Kirillova, E.N.; Drugova, E.D.; Pavlova, O.S.; Simbirtsev, A.S. Regulation of systemic immunity in late period of prolonged radiation exposure, in Collection of Works: *Herald of Ural medical academic science,* Yekaterinburg: 2:50-51; 2009.

7. Drugova, E.D. Serum TNFa and its receptors concentration in professionals in long term after prolonged exposure to radiation. *Radiation Biology Radioecology* 47:696–700; 2007 (in Russian).

8. Gaziev, A.I.; Gulyaeva, N.A.; Belskaya, I.I.; Muksinova, K.N.; Zakharova, M.L.; Antipova, V.N.; Beslepkin, V.G. The use of temperature gradient gel electrophoresis to reveal mutations in peripheral blood mitochondrial DNA. *Radiation Biology Radioecology* 48:133–138; 2008 (in Russian).

9. Kirillova, E.N.; Muksinova, K.N.; Ezhova, A.V.; Sokolova, S.N. Establishment of human immortalized b-lymphocytes bank: Prospects of application. *Immunology* 25:196–197; 2004.

10. Kirillova, E.N.; Muksinova, K.N.; Drozdova, U.V.; Drugova, E.D.; Uryadnitskaya, T.I. State of effector and regulator parts of immunity systems of Mayak workers exposed to prolonged radiation in long term, in *Actual issues of medical and social rehabilitation of citizens exposed to radiation,* Tomsk:61–64; 2008.

11. Kirillova, E.N.; Drozdova, J.V.; Uryadnitskaya ,T.I. Prognostic significance of immune homeostasis values modifications in assessment of late radiation effects of prolonged radiation exposure, in Collection of Works: *Herald of Ural medical academic science,* Yekaterinburg: 2:52-53; 2009.

12. Kirillova, E.N.; Zakharova, M.L.; Drugova, E.D.; Pavlova, O.S. Information capacity of regulatory proteins to estimate immune homeostasis in workers in late period of prolonged exposure. *Russian Allergology Journal* 5:137-8; 2010.

13. Kirillova, E.N.; Zakharova, M.L.; Pavlova, O.S.; Lukyanova T.V. Serum and membrane regulatory proteins level in the blood of the nuclear plant workers as an indicator of radiation-induced changes in immune homeostasis. *Russian Allergology Journal* 4:172-174; 2011 (in Russian).

14. Kirillova, E.N.; Zakharova, M.L.; Pavlova, O.S.; Lukyanova T.V. Cytokine status under prolonged occupational radiation exposure. *Russian Allergology Journal* 1:144-145; 2012 (in Russian).

15. Kirillova, E.N.; Zakharova, M.L.; Lukyanova T.V.; Pavlova, O.S. Development of methodical approaches for detection of immune alterations and high oncological risk among residents of the areas contaminated due to Mayak PA accidents. In: Present-day life safety problems: theory and practice. Part I. Editor: Minikhanova, R.N.; Kazan: PB Scientific Center for Children's Life Safety, pp. 824-832; 2012 (in Russian).

16. Kirillova, E.N.; Zakharova M.L.; Muksinova, K.N.; Drugova, E.D.; Pavlova, O.S; Sokolova, S.N. Quantitative assessment of regulatory proteins information in blood as markers of radiation effects in the late period after occupational exposure. *Health Phys*. 103:28-36; 2012.

17. Kirillova, E.N.; Lukyanova T.V.; Uryadniskaya, T.I.; Zakharova, M.L. Immune status of Ozersk residents exposed to radiation due to Mayak PA accident. In: Experience in minimizing consequences of the 1957 accident. Editors: Akleev, A.V.; Burtovaya, Y.; Gritsenko, V.P.; Klopotyuk, V.N.; Bolshakova, S.A.; Zhidkova, E.M.; Beregovaya, O.A.; Kotova, N.S. Chelyabinsk: LLC ENERGOTEKHNIKA, pp.41-43; 2012 (in Russian).

18. Kolosova, A.V.; Kirillova, E.N.; Zakharova, M.L. Level of regulatory proteins on blood in different periods of oncological disease. *Medical Academic Journal*. Annex: 384-386; 2012 (in Russian).

19. Muksinova K.N.; Neta R.; Kirillova E.N.; Revina V.S.; Sokolova, S.N.; Kreslov, V.V.; Suslova, K.G.; Zacharova, M.L.; Nifatov, A.P.; Uryadnitskaya, T.I.; Drugova, E.D.; Rybkina, V.L. Establishment of Russian Human Radiobiology Tissue Repository. *Medical Radiology and Radiation Safety* 46:98–106; 2001.

20. Muksinova, K.N.; Neta, R.; Kirillova, E.N..; Sokolova, S.N.; Zakharova, M.L.; Revina, V.S.; Drougova, E.D.; Rybkina, V.L.; Uryadnitskaya, T.I.; Yezhova, A.V. Biological material repositorium of personnel of the first atomic enterprise of Russia. *Siberian Medical Journal* 18:84–89; 2003 (in Russian).

21. Muksinova, K.N.; Revina, V.S; Kirillova, E.N; Zakharova, M.L.; Drugova, E.D.; Neta, R. Radiobiological characteristics of the tumor tissue bank of first Russian nuclear weapon facility professionals. *Medical Radiology and Radiation Safety* 51:44–51; 2006.

22. Muksinova K.; Kirillova, E.; Zakharova, M.; Revina, V.; Neta R. Bio-specimens Repository from Mayak workers exposed to protracted radiation. *Health Physics* 90:263–265; 2006.

23. Neta, R. The promise of molecular epidemiology in defining the association between radiation and cancer. *Health Physics* 79:77–84; 2000.

24. Oslina, D.S.; Drugova, E.D.; Kirillova, E.N. Local lung immunity of Mayak PA workers in late period of prolonged exposure. *Journal of Radiological Protection* 55: 53-59; 2010.

25. Pavlova, O.S.; Kirillova, E.N.; Lukyanova T.V.; Oslina D.S.; Ryzhov V.P.. Assessment of bronchopulmonary immunity status among Mayak PA workers in long-term period of prolonged exposure. Radiation biology. Radioecology 52:582-592; 2012 (in Russian).

26. Russell, J.J.; Muksinova, K.N.; Kathren, R.L. Establishment of a Repository containing tissues of organs of deceased workers of Mayak Industrial association exposed to actinide elements. *Health Physics* 76 (6) Suppl. 152–153; 1999.

27. Telnov, V.I.; Kirillova. E.N. Biomarkers of induced ageing in exposed people and their descendants, in Collection of Works: *Herald of Ural medical academic science,* Yekaterinburg: 2:216-217; 2009.

28. Telnov, V.I.; Kirillova, E.N.; Rabinovich, E.I. Biomarkers of induced ageing in exposed individuals. In: Genetics of Lifetime and Ageing. Syktyvkar, 2010:117-123, 2010.

29. Tokarskaya, Z.B.; Khokhryakov, V.F.; Khokhryakov, V.V.; Kirillova, E.N.; Vasilenko, E.K. On malignant neoplasms risk factors for Mayak PA workers. *Journal of Radiological Protection* 55:13-32, 2010.

30. Zakharova, M.L.; Kirillova, E.N.; Drugova, E.D.; Drozdova, J.V. ; Uryadnitskaya, T.I. Study of molecular biomarkers at prolonged radiation effect. *Medicine of extreme situations* 2:40-49; 2009.

31. Zakharova, M.L.; Bezlepkin, V.G.; Kirillova, E.N.; Gaziev, A.I.; Drozdova, J.V.; Uryadnitskaya, T.I.; Strelkova, I.J.; Sokolova, S.N. Genetic material of radiobiological human tissues repository and some findings of research. *Journal of Radiological Protection* 55: 5-13, 2010.

Project 2.9: Database Integration (0)

None.