

**RESULTS OF EXPERIMENTAL RESEARCH OF OIL CONTAINING WASTE  
WITH INCREASED RADIOACTIVITY AS AN OBJECT OF ECOLOGICAL RISK**

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In this paper peculiarities and results of carrying out of experimental research of determination of the main dependencies of migration and distribution of radioactive nuclides during the treatment of oil-containing waste are considered, including selection of samples of oil sludges to set up an experiment, planning and direct execution of the experiment. For the execution of the experiment five samples of oil sludges from sludge accumulators on the territory of Samara region were taken. Measurements were carried out according to the method developed by the authors and software application guide for PC «S PTR». Suggested method is allowing us to establish the nature of the distribution of natural radioactive nuclides of oil-containing waste, to determine the coefficients of migration of radioactive nuclides and its dependence from the characteristic of oil-containing waste. Using of results of experimental researches is allowing us to take timely and qualitative measures to reduce radioactive nuclides negative impact in oil-containing sludges as a factor of ecological risk.

**Key words:** oil containing waste, radioactivity, experimental research, results.

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**REFERENCES**

1. Vasil'ev, A.V. Osobennosti monitoringa negativnogo vozdejstviya neftesoderzhashchih othodov na biosferu / A.V. Vasil'ev // Izvestiya Samarskogo nauchnogo centra RAN. – 2022. – Т. 24. – № 2. – S. 113-120.
2. Vasil'ev, A.V. Podhody k opredeleniyu toksichnosti neftesoderzhashchih othodov s ispol'zovaniem bioindikacii i biotestirovaniya / A.V. Vasil'ev // Izvestiya Samarskogo nauchnogo centra RAN. – 2022. – Т. 24. – № 5. – S. 36-43.
3. Vasil'ev, A.V. Analiz istochnikov zagravazneniya biosfery nefteproduktami i osobennosti ocenki ih ekologicheskogo vozdejstviya / A.V. Vasil'ev // Nauchnyj zhurnal "Akademicheskij vestnik ELPIT". – 2022. – Т. 7. – № 2(20). – S. 15-20.
4. Vasil'ev, A.V. Podhody k razrabotke metodik ocenki negativnogo vozdejstviya neftesoderzhashchih othodov na cheloveka i biosferu/ A.V. Vasil'ev // Izvestiya Samarskogo nauchnogo centra RAN. – 2022. – Т. 24. – № 6. – S. 165-172.
5. Vasil'ev, A.V. Analiz i ocenka zagravazneniya biosfery pri vozdejstvii neftesoderzhashchih othodov: Monografiya / A.V. Vasil'ev. – Samara: Izdatel'stvo SamNC RAN. 2022. – 106 s.
6. Vasil'ev, A.V. Analiz osobennostej i prakticheskie rezul'taty ekologicheskogo monitoringa zagravazneniya pochvy neftesoderzhashchimi othodami / A.V. Vasil'ev, D.E. Bykov, A.A. Pimenov // Izvestiya Samarskogo nauchnogo centra RAN. – 2014. – Т. 16. – № 1(6). – S. 1705-1708.
7. Ermakov, V.V. Opredelenie klassa opasnosti nefteshlamov / V.V. Ermakov, A.N. Suhonosova, D.E. Bykov, D.A. Pirozhkov // Ekologiya i promyshlennost' Rossii. – 2008. – № 7. – S. 14-16.
8. Kartashev, A.G. Vliyanie neftezagryaznenij na pochvennyh bespozvonochnyh zhivotnyh / A.G. Kartashev, T.V. Smolina. – Tomsk: V-Spektre, 2011. – 146 s.
9. Omel'yanyuk, M.V. Očistka neftepromyslovogo oborudovanija ot otloženij solej s prirodnymi radionuklidami / M.V. Omel'yanyuk // Zashchita okružayushchej sredy v neftegazovom komplekse. – 2008. – № 2. – S. 23-29.
10. Puchkov, A.V. Radioaktivnost' nefteshlama: pervye rezul'taty issledovanij territorii bol'shezemel'skoj tundry / A.V. Puchkov, E.YU. YAKOVLEV, A.S. DRUZHININA, S.V. DRUZHININ // Uspekhi sovremennoj estestvoznanija. – 2022. – № 10. – S. 75-80.
11. Ferdinand, V.M. Problema obrazcheniya radioaktivnymi othodami na predpriyatiyah neftedobychi / V.M. Ferdinand, N.S. Minigazimov // Ural'skij ekologicheskij vestnik. – 2014. – № 2. – S. 15-19.
12. Bakr, W.F. Assessment of the radiological impact of oil refining industry // Journal of Environmental Radioactivity. – 2010. – № 101. – S. 237-243.
13. Vasilyev, A.V. Method and approaches to the estimation of ecological risks of urban territories // Safety of Technogenic Environment. 2014. № 6. Pp. 43-46.
14. Vasilyev, A.V. Classification and reduction of negative impact of waste of oil-gas industry. Proc. of World Heritage and Degradation, Smart Design, Planning and Technologies Le Vie Dei Mercanti. XIV Forum Internazionale di Studi. 2016. Pp. 101-107.
15. Vasilyev, A.V. Experience, Results and Problems of Ecological Monitoring of Oil Containing Waste. Proceedings of the 2018 IEEE International Conference "Management of Municipal Waste as an Important Factor of Sustainable Urban Development" (WASTE 2018), October, 4-6, 2018, Saint-Petersburg; edition of Saint-Petersburg State Electrical Technical University "LETI", 2018, pp. 82-85.

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