ISSN 2518-170X (Online)
ISSN 2224-5278 (Print)

«ҚАЗАҚСТАН РЕСПУБЛИКАСЫ
ҰЛТТЫҚ ҒЫЛЫМ
АКАДЕМИЯСЫ» РҚБ

«ҚАЗАҚСТАН РЕСПУБЛИКАСЫ
ҰЛТТЫҚ ҒЫЛЫМ АКАДЕМИЯСЫ» РҚБ

ХАБАРЛАРЫ

ИЗВЕСТИЯ

РОО «НАЦИОНАЛЬНОЙ
АКАДЕМИИ НАУК
РЕСПУБЛИКИ КАЗАХСТАН»

N E W S

OF THE ACADEMY OF SCIENCES
OF THE REPUBLIC OF
KAZAKHSTAN

SERIES

OF GEOLOGY AND TECHNICAL SCIENCES

4 (466)

JULY – AUGUST 2024

THE JOURNAL WAS FOUNDED IN 1940

PUBLISHED 6 TIMES A YEAR

ALMATY, NAS RK

NAS RK is pleased to announce that News of NAS RK. Series of geology and technical sciences scientific journal has been accepted for indexing in the Emerging Sources Citation Index, a new edition of Web of Science. Content in this index is under consideration by Clarivate Analytics to be accepted in the Science Citation Index Expanded, the Social Sciences Citation Index, and the Arts & Humanities Citation Index. The quality and depth of content Web of Science offers to researchers, authors, publishers, and institutions sets it apart from other research databases. The inclusion of News of NAS RK. Series of geology and technical sciences in the Emerging Sources Citation Index demonstrates our dedication to providing the most relevant and influential content of geology and engineering sciences to our community.

Қазақстан Республикасы Ұлттық ғылым академиясы «ҚР ҰҒА Хабарлары. Геология және техникалық ғылымдар сериясы» ғылыми журналының Web of Science-тің жаңаланған нұсқасы Emerging Sources Citation Index-те индекстелуге қабылданғанын хабарлайды. Бұл индекстелу барысында Clarivate Analytics компаниясы журналды одан әрі the Science Citation Index Expanded, the Social Sciences Citation Index және the Arts & Humanities Citation Index-ке қабылдау мәселесін қарастыруда. Webof Science зерттеушілер, авторлар, баспашылар мен мекемелерге контент тереңдігі мен сапасын ұсынады. ҚР ҰҒА Хабарлары. Геология және техникалық ғылымдар сериясы Emerging Sources Citation Index-ке енуі біздің қоғамдастық үшін ең өзекті және беделді геология және техникалық ғылымдар бойынша контентке адалдығымызды білдіреді.

НАН РК сообщает, что научный журнал «Известия НАН РК. Серия геологии и технических наук» был принят для индексирования в Emerging Sources Citation Index, обновленной версии Web of Science. Содержание в этом индексировании находится в стадии рассмотрения компанией Clarivate Analytics для дальнейшего принятия журнала в the Science Citation Index Expanded, the Social Sciences Citation Index и the Arts & Humanities Citation Index. Web of Science предлагает качество и глубину контента для исследователей, авторов, издателей и учреждений. Включение Известия НАН РК. Серия геологии и технических наук в Emerging Sources Citation Index демонстрирует нашу приверженность к наиболее актуальному и влиятельному контенту по геологии и техническим наукам для нашего сообщества.

«ҚР ҰҒА» РҚБ Хабарлары. Геология және техникалық ғылымдар сериясы».
ISSN 2518-170X (Online),
ISSN 2224-5278 (Print)

Меншіктеуші: «Қазақстан Республикасының Ұлттық ғылым академиясы» РҚБ (Алматы қ.).

Қазақстан Республикасының Ақпарат және қоғамдық даму министрлігінің Ақпарат комитетінде 29.07.2020 ж. берілген **№ KZ39VPY00025420** мерзімдік басылым тіркеуіне қойылу туралы куәлік.

Тақырыптық бағыты: *геология, мұнай және газды өңдеудің химиялық технологиялары, мұнай химиясы, металдарды алу және олардың қосындыларының технологиясы.*

Мерзімділігі: жылына 6 рет.

Тиражы: 300 дана.

Редакцияның мекен-жайы: 050010, Алматы қ., Шевченко көш., 28, 219 бөл., тел.: 272-13-19
http://www.geolog-technical.kz/index.php/en/

«Известия РОО «НАН РК». Серия геологии и технических наук».
ISSN 2518-170X (Online),
ISSN 2224-5278 (Print)

Собственник: Республиканское общественное объединение «Национальная академия наук Республики Казахстан» (г. Алматы).

Свидетельство о постановке на учет периодического печатного издания в Комитете информации Министерства информации и общественного развития Республики Казахстан **№ KZ39VPY00025420,** выданное 29.07.2020 г.

Тематическая направленность: *геология, химические технологии переработки нефти и газа, нефтехимия, технологии извлечения металлов и их соеденений.*

Периодичность: 6 раз в год.

Тираж: 300 экземпляров.

Адрес редакции: 050010, г. Алматы, ул. Шевченко, 28, оф. 219, тел.: 272-13-19

http://www.geolog-technical.kz/index.php/en/

News of the National Academy of Sciences of the Republic of Kazakhstan. Series of geology and technology sciences.
ISSN 2518-170X (Online),
ISSN 2224-5278 (Print)
Owner: RPA «National Academy of Sciences of the Republic of Kazakhstan» (Almaty).
The certificate of registration of a periodical printed publication in the Committee of information of the Ministry of Information and Social Development of the Republic of Kazakhstan **No. KZ39VPY00025420,** issued 29.07.2020.
Thematic scope: *geology, chemical technologies for oil and gas processing, petrochemistry, technologies for extracting metals and their connections.*
Periodicity: 6 times a year.
Circulation: 300 copies.
Editorial address: 28, Shevchenko str., of. 219, Almaty, 050010, tel. 272-13-19
http://www.geolog-technical.kz/index.php/en/

NEWS of the National Academy of Sciences of the Republic of Kazakhstan
SERIES OF GEOLOGY AND TECHNICAL SCIENCES
ISSN 2224–5278
Volume 4. Number 466 (2024), 237–245
https://doi.org/10.32014/2024.2518-170X.438
UDC 5.504.61

© **A.A.Tashimova[1], G.I. Issayev[2*], Z.M. Kerimbekova[1], E.K. Ibragimova[2], A.M. Bostanova[2], 2024**
[1]M. Auezov South Kazakhstan University, Shymkent, Kazakhstan;
[2]K.A. Yassawi International Kazakh-Turkish University, Turkestan, Kazakhstan.
E-mail: gani.isayev@ayu.edu.kz

ANALYSIS OF THE RESOURCE POTENTIAL OF SOLID OIL PRODUCTION WASTE

Tashimova Aliya — PhD doctor student, M.Auezov South Kazakhstan University, Shymkent, Kazakhstan
E-mail: aliyamaulen@mail.ru, https://orcid.org/0000-0003-1703-3792;
Issayev Gani — Candidate of technical sciences, Associate Professor, K. Yassawi International Kazakh-Turkish University, Turkestan, Republic of Kazakhstan
E-mail: gani.isayev@ayu.edu.kz, https://orcid.org/0000-0001-5120-8387;
Kerimbekova Zaurekul — Candidate of technical sciences, Associate professor at M.Auezov South Kazakhstan University, Shymkent, Kazakhstan
E-mail: zaure.kerimbekova@mail.ru, https://orcid.org/0000-0001-8431-563X;
Ibragimova Elmira — Candidate of technical sciences, Associate Professor Khoja Akhmet Yassawi International Kazakh-Turkish University, Turkistan, Kazakhstan
E-mail: elmira.ibragimova@ayu.edu.kz, https://orcid.org/0000-0001-8944-5433;
Bostanova Ardak — candidate of Biological Sciences, International Kazakh-Turkish university named after Khoja Ahmed Yasawi, Turkestan, Kazakhstan.
E-mail: ardak.bostanova@ayu.edu.kz. https://orcid.org/0000-0001-8035-9854.

Abstract. In fact, the sources of oil waste are oil-containing flushing fluids used in drilling operations; well repair; cleaning of technological equipment; pre-treatment of oil in installations, oil tanks and cleaning of oil-contaminated soil; precipitation falling on open places of oil waste; emergency spills due to damage to oil and gas pipelines. Cuttings are also harvested in open warehouses or closed tanks. At oil waste processing enterprises, there is a practice of their joint collection, transportation and temporary placement, this approach leads to the further use of various types of waste. It is necessary to isolate (before placing in warehouses) and use oil waste containing realized substances as secondary raw materials. In the course of the study, a processing system for working with waste generated during oil production was proposed.

Keywords: oil waste, secondary raw materials, utilisation of solid oil waste, environment, waste management scheme

© А.А. Ташимова[1], Ғ.И. Исаев[2*], З.М. Керимбекова[1], Э.Қ. Ибрагимова[2], А.М. Бостанова[2], 2024

[1]М. Әуезов атындағы Оңтүстік Қазақстан университеті, Шымкент, Қазақстан;
[2]Қ.А. Ясауи атындағы Халықаралық қазақ-түрік университеті, Түркістан, Қазақстан.
E-mail: gani.isayev@ayu.edu.kz

МҰНАЙ ӨНДІРУДІҢ ҚАТТЫ ҚАЛДЫҚТАРЫНЫҢ РЕСУРСТЫҚ ӘЛЕУЕТІН ТАЛДАУ

Ташимова Алия — PhD докторанты, М. Әуезов атындағы Оңтүстік Қазақстан университеті, Шымкент, Қазақстан
E-mail: aliyamaulen@mail.ru, https://orcid.org/0000-0003-1703-3792;
Исаев Ғани — техника ғылымдарының кандидаты, Қауымдастырылған профессор, Қ.А.Ясауи атындағы Халықаралық қазақ-түрік университеті, Түркістан, Қазақстан
E-mail: gani.isayev@ayu.edu.kz, https://orcid.org/0000-0001-5120-8387;
Керимбекова Заурекуль — техника ғылымдарының кандидаты, қауымдастырылған профессор, М.Әуезов атындағы Оңтүстік Қазақстан университеті, Шымкент, Қазақстан
E-mail: zaure.kerimbekova@mail.ru, https://orcid.org/0000-0001-8431-563X;
Ибрагимова Эльмира — техника ғылымдарының кандидаты, доцент м.а., Қожа Ахмет Ясауи атындағы Халықаралық қазақ-түрік университеті, Түркістан, Қазақстан
E-mail: elmira.ibragimova@ayu.edu.kz, https://orcid.org/0000-0001-8944-5433;
Бостанова Ардак — биология ғылымдарының кандидаты, Қожа Ахмет Ясауи атындағы Халықаралық қазақ-түрік университеті, Түркістан, Қазақстан
E-mail: ardak.bostanova@ayu.edu.kz. https://orcid.org/0000-0001-8035-9854.

Аннотация. Негізі мұнай қалдықтарының шығу көздеріне бұрғылау жұмыстарында қолданылатын құрамында мұнайы бар жуу сұйықтықтар жатады; ұңғымаларды жөндеу жұмыстары; технологиялық жабдықты тазарту; қондырғыларда мұнайды алдын ала тазарту, мұнай құйылатын резервуарлар және мұнаймен ластанған топырақтан тазарту; атмосфералық жауын-шашынның мұнай қалдықтары ашық орналастырылған орындарына түсуі; мұнай және газ құбырларының зақымдануы себебінен апаттық төгілулер. Шламды да ашық қоймаларда немесе жабық резервуарларда жинақтайды. Мұнай қалдықтарын өңдейтін кәсіпорындарда оларды бірге жинауға, тасымалдауға және уақытша орналастыруға тәжірибе қалыптасқан, бұл тәсіл сапасы әр түрлі қалдықтарды одан әрі пайдалануға киынға соқтырады. Құрамында іске асатын заттары бар мұнай қалдықтарын оқшаулау (қоймаларға орналастырудан бұрын) және екіншілік шикізат ретінде қолдану қажет. Зерттеу барысында мұнайды өндіру кезінде пайда болатын қалдықтармен жұмыс жасаудың өңдеу жүйесі ұсынылды.

Түйін сөздер: мұнай қалдықтары, қайталама шикізат, қатты мұнай қалдықтарын кәдеге жарату, қоршаған орта, қалдықтарды басқару схемасы

© А.А. Ташимова[1], Г.И. Исаев[2*], З.М. Керимбекова[1], Э.К. Ибрагимова[2], А.М. Бостанова[2], 2024

[1]Южно-Казахстанский университет им. М. Ауэзова, Шымкент, Казахстан;
[2]Международный Казахско-Турецкий университет имени Х.А. Ясави, Туркестан, Казахстан.
E-mail: gani.isayev@ayu.edu.kz

АНАЛИЗ РЕСУРСНОГО ПОТЕНЦИАЛА ТВЕРДЫХ ОТХОДОВ НЕФТЕДОБЫЧИ

Ташимова Алия — докторант PhD, Южно-Казахстанский университет имени М.Ауэзова, Шымкент, Казахстан
E-mail: aliyamaulen@mail.ru, https://orcid.org/0000-0003-1703-3792;
Исаев Гани — кандидат технических наук, доцент, Международный казахско-турецкий университет имени Х.А.Ясави, Туркестан, Казахстан
E-mail: gani.isaev@ayu.edu.kz, https://orcid.org/0000-0001-5120-8387;
Керимбекова Заурекуль — кандидат технических наук, ассоциированный профессор, Южно-Казахстанский университет имени М. Ауэзова, Шымкент, Казахстан
E-mail: zaure.kerimbekova@mail.ru, https://orcid.org/0000-0001-8431-563X;
Ибрагимова Эльмира — кандидат технических наук, и.о. доцента, Международный казахско-турецкий университет имени Х.А. Ясави, Туркестан, Казахстан
E-mail: elmira.ibragimova@ayu.edu.kz, https://orcid.org/0000-0001-8944-5433;
Бостанова Ардак — кандидат биологических наук, Международный казахско-турецкий университет имени Ходжи Ахмеда Ясави, Туркестан, Казахстан
E-mail: ardak.bostanova@ayu.edu.kz. https://orcid.org/0000-0001-8035-9854.

Аннотация. Фактически источниками нефтеотходов являются нефтесодержащие промывочные жидкости, используемые при буровых работах, ремонте скважин, очистке технологического оборудования; предварительной обработке нефти в установках, нефтяных резервуарах и очистке нефтезагрязненной почвы; атмосферные осадки, выпадающие на открытые места хранения нефтеотходов, аварийные разливы при повреждении нефте- и газопроводов. Сбор шлама также производится на открытых складах или в закрытых резервуарах. На предприятиях по переработке нефтяных отходов существует практика их совместного сбора, транспортировки и временного размещения, такой подход приводит к дальнейшему использованию различных видов отходов. Необходимо изолировать (до размещения на складах) и использовать в качестве вторичного сырья нефтеотходы, содержащие реализуемые вещества. В ходе исследования была предложена система переработки отходов, образующихся при добыче нефти.

Ключевые слова: нефтеотходы, вторичное сырье, утилизация твердых нефтеотходов, окружающая среда, схема отбращения с отходами

Introduction

An analysis of the prospects for the development of systems for working with oil waste showed that the problem of solid oil waste can be solved by using them as secondary raw materials. A significant number of alternative processing technologies, differing in the sources of origin, composition and properties of oil waste, testify to the technical possibility of full disposal of all groups of solid oil waste (Jumagulov et al., 2015: 250).

At present, a comparative analysis of the composition of disposed oil waste and the allocated groups of solid oil production waste has made it possible to propose the most ra-

tional areas for the use of solid oil waste: oil soils - in road construction, repair waste-in the preparation of building materials, asphalt-resin paraffin waste (ARPW) - for the production of waterproofing materials (Table 1).

Table 1 - Recommended applications of different groups of solid waste from oil production

Scope of application	Type of oil waste	The composition of the oil residue, wt.%		
		Organic part	Mineral part	Water
Road construction	Oil sludge from oil production and oil production plant	6-40	50-87	7-20
	Oil soil	10-15	65-80	10-15
Building materials (expanded clay, ceramic, filler, rubber compound)	Condensed oil sludge, oil - and oil sludge	13-28	59-77	10-22
	Repair waste	25-35	20-45	30-45
Waterproofing materials	Oil sludge, sludge from the regeneration of used oils	40-65	20-27	15-33
	ARPW	46-98	1-49	1-5

The beneficial properties of solid oil waste can be characterized by resource potential, which quantitatively reflects the possibility of saving natural resources by using waste as secondary raw materials. Studies of the composition and properties of solid oil waste have made it possible to identify a group of waste that determines the potential resource characteristics of waste (Kosulina et al., 2012: 187–192; Kuanbayeva et al., 2024: 1640–1647).

The share of conditioning raw materials that can be obtained during the collection of oil waste is characterized by the potential of secondary raw materials. For these man - made solid waste, the potential of secondary raw materials, excluding losses, can be 100% by mass, including: waste from repair work – 15 %, asphalt - resin paraffin waste – 9 %, oil - contaminated soil (excluding emergency formation) – 2 %, oil-liquid substances – 74 % (Figure 1). A special group of oil residues it is asphalt-resin paraffin waste. They are formed as a result of underground and major repairs of wells, when cleaning technological equipment (oil storage tanks, bullites, sewer wells), steaming pump and compressor pipelines using special installations for deparafinization. Unlike other solid oil residues, asphalt-resin paraffin waste contain a low content of heavy fraction petroleum products - asphaltenes, resins, paraffins (mass fraction up to 98 %) and mechanical impurities (mass fraction up to 1–49 %) and water (mass fraction up to 5 %). (Jumagulov et al., 2012: 175–178; Sokolov, 2017: 160; Ermakov et al., 2008: 14–16).

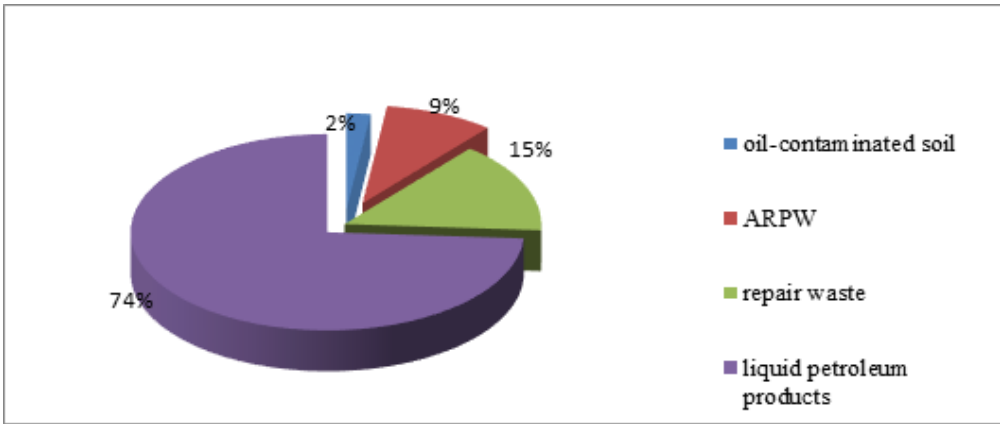

Figure 1. The structure of oil waste at an oil production enterprise (by the example of PKKR JSC)

According to the analysis carried out, the current scheme leads to a decrease in the natural resource potential, which leads to the loss of the originally existing raw material potential in solid oil waste. To effectively use the raw material potential, it requires the use of differentiated approaches to the formed solid oil waste flows (Malikova et al., 2004: 37–38; Jumagulov et al., 2012: 72–76; Bektenov et al., 2016: 95–101; Rozhkova et al., 2021: 151–158; Tanzharikov et al., 2021: 99–108).

Thus, by assessing the resource potential, the proposed approach to working with solid waste from oil production confirms that the distribution of waste at the initial stages (formation, collection) by the highest possible number of flows makes it possible to ensure their more complete use as secondary raw materials and products, that is, to realize the potential of secondary raw materials. Such an approach makes it possible to increase the efficiency of working with solid waste from oil production.

Research materials and methods

The proposed oil waste management system is based on the developed classification of oil waste, the results of assessing the resource potential of selected waste groups and the results of the analysis of modern trends in the utilization of oil waste. It is based on the formulated principles: complete separate collection and non-mixing of waste flows of different categories; maximum extraction of secondary raw materials and the use of separate classes of waste without processing.

Figure 2 presents the movement of oil production waste at the main stages of the natural resource cycle within the framework of existing and proposed waste management schemes.

In the current scheme (Figure 2, scheme I), combined collection, transportation and long-term storage of liquid and solid oil waste (at facilities that do not meet modern environmental requirements) is carried out. Further, liquid oil residues are processed to produce commercial oil, solid phase and water. Thus, the current scheme determines the return of liquid waste from oil production into circulation along the chain «waste - secondary raw materials - marketable products». The resulting water is pumped into the reservoir to maintain pressure in the bowels (Sakharova et al., 2020; Tashimova et al., 2023; Nurpeissova et al., 2023; Meshcheryakov et al., 2017: 45–51; Petro Kazakhstan Kumkol Resources JSC, 2017: 94).

The extracted solid phase (residual content of petroleum products 15 % or more) is usually sent back to temporary accommodation facilities where an unrefined mixture of solid oil residues is stored. In some cases, solid oil residues are neutralized by destructive methods. Their flow is carried out according to the «waste – environment» scheme. This means that in the existing system, solid oil waste is removed from the natural resource cycle, economically their storage is considered unprofitable and pollutes the environment.

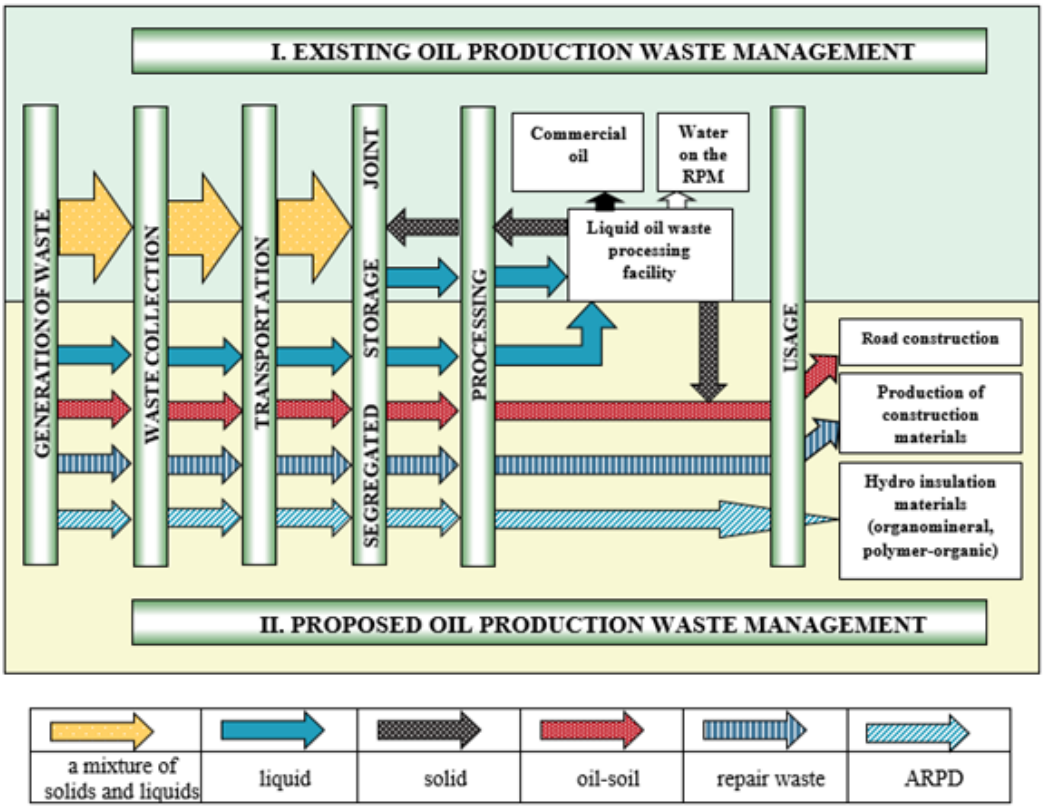

Figure 2. Proposed oil production waste management scheme. Oil waste streams.

According to the modern concept of recycling, strict environmental and economic requirements are imposed on the collection and processing of waste, it is necessary to ensure their mandatory return to the production cycle in the form of secondary resources. In this regard, we proposed the theoretical prerequisites for creating a system for working with oil production waste, the implementation of which would actually accelerate the development of the secondary oil waste market and regulate the relations between its participants - owners of oil waste and relevant specialized organizations for the disposal of oil waste.

From our point of view, the system of working with oil production waste implies certain technological stages and maximum safety for the environment, in which oil products undergo successive changes at low costs according to the «waste - secondary product - commodity item» scheme (Figure 2, scheme II). The system consists of six technological stages that make up the life cycle of oil waste. The rational organization of the system for handling waste from oil production and its actual functioning are ensured by a set of

measures, including the development of legal norms, economic mechanisms, and appropriate organizational and technical conditions.

According to this method, the oil waste management system is divided into the following six main stages:

- formation,
- separate collection,
- separate transportation,
- separate storage at a landfill that meets environmental requirements,
- processing of liquid waste,
- separate use of solid waste (repair waste, oil-contaminated soil, ARPW).

The fundamental difference between the proposed system and the existing scheme for working with waste generated during oil production is the emergence of a new stage of «separate use of solid oil waste» and modernization in the direction of separate implementation of the stages of «collection, transportation, storage of oil waste».

All solid oil waste is collected separately, transported and stored, and then used by rational, environmentally safe and technically feasible methods.

The period of «solid waste use», using modern resource-saving and environmentally safe technologies, creates a basis for the separate use of the oil waste group with the simultaneous receipt of demanded materials and products.

It should be noted that during the processing and operation of oil waste, in fact, the stages of «disposal» and «production» are combined, thus ensuring the circulation of flows of oil products in a closed cycle. The combination of the above stages forms one of the most important trends in the development of the oil production waste management system. This trend determines the emergence of specialized enterprises engaged in the professional organization of the circulation of oil waste during periods when there is a transition of oil products from one quality to another.

It is certainly not easy to simultaneously ensure the organization of separate collection, transportation, storage and use of solid oil waste, but it is these stages that are the main key stages of the considered circulation system. The organization of work, especially at these stages, requires economic incentives, the development of an additional regulatory framework. It should be as complex as possible. Complex in nature means the organization of work in which one performer simultaneously and in a coordinated manner serves all four main stages of the management system. With this approach, oil waste is considered as a valuable raw material to be recycled. This makes it possible to control and coordinate the work at the specified technological stages, save resources, ensure high efficiency and environmental safety of the entire system.

To facilitate the transition to the proposed system, it is possible to introduce a complete separate collection of oil waste in stages within the framework of a special collection system. At the earliest stage, all waste generated at oil enterprises is certified, the volumes of oil waste produced by categories are determined, the technical and economic characteristics of the necessary equipment and possible costs are calculated, and a program for the disposal of oil waste is developed.

Conclusions

The program must include the following:

- study of the oil production solid waste market and compilation of the database «enterprise-actual volume of generated waste (by groups) - projected volumes»;

- preliminary sampling and analytical control of quality indicators of accumulated waste;

- collection and transportation of oil waste by specialized vehicles;

- separate collection and storage of waste in special containers depending on the groups of collected;

- transportation of types of oil waste from the place of permanent storage to the place of processing by special specialized vehicles;

- supply of secondary products to consumers.

At the second stage, the proposed system of work with man-made waste of oil production in full or for individual groups of oil waste will be implemented. The final element of the program should be the creation of modern production facilities for the efficient use of solid waste from oil production.

REFERENCES

K.T. Abdraimova, E.K. Ibragimova, G.I.Issayev, N.A. Akhmetov (2023). Use of fabaceae plants as a phytomeliorant in salinated lands and study of the translocation coefficient. *NEWS of the National Academy of Sciences of the Republic of Kazakhstan Series of geology and technical sciences*. — ISSN 2224-5278. —Volume 6. —Number 462 (2023). — Pp. 8–19.

Bektenov N.A., Ergozhin E.E., Isakov O.A., Sadykov K.A., Baidullaeva A.K. (2016). Technology of advanced materials concrete based on oil and construction waste./ —*News of the National Academy of Sciences of the Republic of Kazakhstan, Series of Geology and Technical Sciences*. — 6 (420), 2016. — Pp. 95–101.

Ermakov V.V., Suhonosova A.N., Bykov D.E, Pirojkov D.A. (2008). Opredelenie klassa opasnosti nefteshlamov// Ekologiya i promyshlennost Rossii. — 2008. — № 9. — Pp. 14–16.

Jumagulov T.J., Tanjarykov P.A., Abjalelov B.B., Abjaev M.M. (2015). Ondiris kaldyktaryn tiimdi paidalanu arkyly ekologiyany jaksartu. — Monografiya. — Kyzylorda: «BAQORDA», — 2015. — 250 p.

Jumagulov T.J., Tanjarykov P.A. (2012). Tehnogendik kaldyktardyn korshagan ortaga tigizetin ziyandy aseri jane olardy kadege jaratu tehnologiyasy// «Munai-gaz industriyasynyn innovatsiyalyk damu joldary» IV Halykaralyk gylymi-praktikalyk konferentsiya. — Almaty, KBTU, — 23–24 akpan 2012. — Pp.175–178.

Jumagulov T.J., Abjaev M.M., Sakitjanov M.Sh., Tanjarykov P.A., Uderbayev S.S. Munai kenishterindegi tehnogendik kaldyktardy fizika-himiyalyk taldau// «Gylymi zertteuler alemi» Respublikalyk gylymi jurnal. — №1—2 (55—56), 2012. — P.72–76.

Kosulina T.P., Kononenko E.A., Tcokur O.S. Utilizatciya neftyanyh shlamov reagentnym metodom i ispolzovanie produktov utilizatsii v kachestve vtorichnyh materialnyh resursov// Mejdunarodnyi nauchnyi jurnal Alternativnaya energetika i ekologiya. — 2012. №2 (106). — Pp. 187–192.

Kuanbayeva Bayan, Imashev Gizatulla, Mailybayeva Aiman, Mukhanbetzhanova Akmaral, Koshchanova Gulash (2024). The effectiveness of using interactive computer models when teaching physics in modern school. Scientific Herald of Uzhhorod University. Series Physics. — V. 55. — Pp. 1640–1647. — ISSN 24158038. https://doi.org/10.54919/physics/55.2024.164vu0

Malikova M.Yu., Stashok N.K. (2004). Novaya tehnologiya utilizatcii promyshlennyh othodov, soderjashchih neft i nefteprodukty reagentom R// Izobreteniya i ratcpredlojeniya v neftegazovoi promyshlennosti. — 2004. —№5. — Pp. 37–38.

Meshcheryakov S.V., Ostakh S.V., Ostakh O.S. (2017). Engineering interactive system for the neutralization of oily waste contaminated with natural radionuclides // Occupational Safety in Industry. 2017. — No. 9. — Pp. 45–51.

Nurpeissova M., Burkhanov B., Fedotenko N., Nazarov E. (2023). Assessment of oil waste as a source of environmental pollution and as a source of secondary raw materials. Sustainable development of mountain territories. — V.15. — №4 (58), 2023. DOI: 10.21177/1998-4502-2023-15-4-833-841

Sokolov L.I. Pererabotka i utilizatciya neftesoderjashchih othodov — monografiya. — M.: «Infra—Injeneriya», 2017. — 160 p.

Sakharova A.A., Sidyakin P.A., Shchitov D.M., Nesterchuk A.V. (2020). Recycling of waste to secondary raw materials as a way to increase environmental safety of production. IOP Conference Series: Materials Science and Engineering. IOP Conf. Series: Materials Science and Engineering. — 913 (2020). — 052066. IOP

Publishing. doi:10.1088/1757-899X/913/5/052066.

Rozhkova O.V., Yermekov M.T., Tolysbayev Ye.T., Maryinsky S.G., Vetyugov A.V. (2021). Problems of storage, refinery and disposing of drilling waste of the exploration and production sector of Kazakhstan. Arrangement and operation features of sludge collectors and oil storage pits./ — *News of the National Academy of Sciences of the Republic of Kazakhstan, Series of Geology and Technical Sciences,* — 2. 2021. — Pp.151–158. — ISSN 2224-5278. https://doi.org/10.32014/2021.2518-170X.47.

Tanzharikov P.A., Yermukhanova N.B., Kerimbekova Z.M. (2021). Environmental impact of solid oil waste accumulation./ Oil and gas, №4 (124). — Almaty — 2021. — Pp. 99–108. DOI: 10.37878/2708-0080/2021-4.08.

Tashimova A., Tanzharikov P., Kerimbekova Z., Ivahnuyk G. and Abilbek Zh. (2023).The results of laboratory studies on the composition of roofing and waterproofing mastics. ARPN Journal of Engineering and Applied Sciences. —Vol. 18. — No. 13. — July 2023. —ISSN 1819-6608.

Petro Kazakhstan Kumkol Resources JSC. Preliminary to the project of appraisal works on the Contract territory No. 1398 for the period 2016—2018 within the territory of the blocks in the Karaganda region of the Republic of Kazakhstan. — Kyzylorda, 2017. — P. 94.

CONTENT

Publication Ethics and Publication Malpractice in the journals of the National Academy of Sciences of the Republic of Kazakhstan

For information on Ethics in publishing and Ethical guidelines for journal publication see http://www.elsevier.com/publishingethics and http://www.elsevier.com/journal-authors/ethics.

Submission of an article to the National Academy of Sciences of the Republic of Kazakhstan implies that the work described has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis or as an electronic preprint, see http://www.elsevier.com/postingpolicy), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. In particular, translations into English of papers already published in another language are not accepted.

No other forms of scientific misconduct are allowed, such as plagiarism, falsification, fraudulent data, incorrect interpretation of other works, incorrect citations, etc. The National Academy of Sciences of the Republic of Kazakhstan follows the Code of Conduct of the Committee on Publication Ethics (COPE), and follows the COPE Flowcharts for Resolving Cases of Suspected Misconduct (http://publicationethics.org/files/u2/New_Code.pdf). To verify originality, your article may be checked by the originality detection service Cross Check http://www.elsevier.com/editors/plagdetect.

The authors are obliged to participate in peer review process and be ready to provide corrections, clarifications, retractions and apologies when needed. All authors of a paper should have significantly contributed to the research.

The reviewers should provide objective judgments and should point out relevant published works which are not yet cited. Reviewed articles should be treated confidentially. The reviewers will be chosen in such a way that there is no conflict of interests with respect to the research, the authors and/or the research funders.

The editors have complete responsibility and authority to reject or accept a paper, and they will onh accept a paper when reasonably certain. They will preserve anonymity of reviewers and promote publication of corrections, clarifications, retractions and apologies when needed. The acceptance of a paper automatically implies the copyright transfer to the National Academy of sciences of the Republic of Kazakhstan.

The Editorial Board of the National Academy of sciences of the Republic of Kazakhstan will monitor and safeguard publishing ethics.

Правила оформления статьи для публикации в журнале смотреть на сайте:
www:nauka-nanrk.kz
ISSN 2518-1483 (Online), ISSN 2224-5227 (Print)
http://geolog-technical.kz/en/archive/

Подписано в печать 15.08.2024.
Формат 60x88$^{1}/_{8}$. Бумага офсетная. Печать - ризограф.
15,0 п.л. Тираж 300. Заказ 4.

РОО «Национальная академия наук РК» 050010,
Алматы, ул. Шевченко, 28, т. 272-13-19