

ISSN 2518-170X (Online)

ISSN 2224-5278 (Print)



ҚАЙЫРЫМДЫЛЫҚ ҚОРЫ

HALYK

CHARITY FOUNDATION

«ҚАЗАҚСТАН РЕСПУБЛИКАСЫ
ҰЛТТЫҚ ҒЫЛЫМ АКАДЕМИЯСЫ» РҚБ
«ХАЛЫҚ» ЖҚ

Х А Б А Р Л А Р Ы

ИЗВЕСТИЯ

РОО «НАЦИОНАЛЬНОЙ
АКАДЕМИИ НАУК РЕСПУБЛИКИ
КАЗАХСТАН»
ЧФ «Халық»

N E W S

OF THE ACADEMY OF SCIENCES
OF THE REPUBLIC OF
KAZAKHSTAN
«Halyk» Private Foundation

SERIES

OF GEOLOGY AND TECHNICAL SCIENCES

1 (463)

JANUARY – FEBRUARY 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. Web of 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.

НАНПК сообщает, что научный журнал «Известия НАНПК. 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 НАНПК. 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.



ЧФ «ХАЛЫҚ»

В 2016 году для развития и улучшения качества жизни казахстанцев был создан частный Благотворительный фонд «Халык». За годы своей деятельности на реализацию благотворительных проектов в областях образования и науки, социальной защиты, культуры, здравоохранения и спорта, Фонд выделил более 45 миллиардов тенге.

Особое внимание Благотворительный фонд «Халык» уделяет образовательным программам, считая это направление одним из ключевых в своей деятельности. Оказывая поддержку отечественному образованию, Фонд вносит свой посильный вклад в развитие качественного образования в Казахстане. Тем самым способствуя росту числа людей, способных менять жизнь в стране к лучшему – профессионалов в различных сферах, потенциальных лидеров и «великих умов». Одной из значимых инициатив фонда «Халык» в образовательной сфере стал проект *Ozgeris powered by Halyk Fund* – первый в стране бизнес-инкубатор для учащихся 9-11 классов, который помогает развивать необходимые в современном мире предпринимательские навыки. Так, на содействие малому бизнесу школьников было выделено более 200 грантов. Для поддержки талантливых и мотивированных детей Фонд неоднократно выделял гранты на обучение в Международной школе «Мирас» и в Astana IT University, а также помог казахстанским школьникам принять участие в престижном конкурсе «USTEM Robotics» в США. Авторские работы в рамках проекта «Тәлімгер», которому Фонд оказал поддержку, легли в основу учебной программы, учебников и учебно-методических книг по предмету «Основы предпринимательства и бизнеса», преподаваемого в 10-11 классах казахстанских школ и колледжей.

Помимо помощи школьникам, учащимся колледжей и студентам Фонд считает важным внести свой вклад в повышение квалификации педагогов, совершенствование их знаний и навыков, поскольку именно они являются проводниками знаний будущих поколений казахстанцев. При поддержке Фонда «Халык» в южной столице был организован ежегодный городской конкурс педагогов «Almaty Digital Ustaz».

Важной инициативой стал реализуемый проект по обучению основам финансовой грамотности преподавателей из восьми областей Казахстана, что должно оказать существенное влияние на воспитание финансовой грамотности и предпринимательского мышления у нового поколения граждан страны.

Необходимую помощь Фонд «Халык» оказывает и тем, кто особенно остро в ней нуждается. В рамках социальной защиты населения активно проводится

работа по поддержке детей, оставшихся без родителей, детей и взрослых из социально уязвимых слоев населения, людей с ограниченными возможностями, а также обеспечению нуждающихся социальным жильем, строительству социально важных объектов, таких как детские сады, детские площадки и физкультурно-оздоровительные комплексы.

В копилку добрых дел Фонда «Халык» можно добавить оказание помощи детскому спорту, куда относится поддержка в развитии детского футбола и карате в нашей стране. Жизненно важную помощь Благотворительный фонд «Халык» оказал нашим соотечественникам во время недавней пандемии COVID-19. Тогда, в разгар тяжелой борьбы с коронавирусной инфекцией Фонд выделил свыше 11 миллиардов тенге на приобретение необходимого медицинского оборудования и дорогостоящих медицинских препаратов, автомобилей скорой медицинской помощи и средств защиты, адресную материальную помощь социально уязвимым слоям населения и денежные выплаты медицинским работникам.

В 2023 году наряду с другими проектами, нацеленными на повышение благосостояния казахстанских граждан Фонд решил уделить особое внимание науке, поскольку она является частью общественной культуры, а уровень ее развития определяет уровень развития государства.

Поддержка Фондом выпуска журналов Национальной Академии наук Республики Казахстан, которые входят в международные фонды Scopus и Wos и в которых публикуются статьи отечественных ученых, докторантов и магистрантов, а также научных сотрудников высших учебных заведений и научно-исследовательских институтов нашей страны является не менее значимым вкладом Фонда в развитие казахстанского общества.

**С уважением,
Благотворительный Фонд «Халык»!**

Бас редактор

ЖҰРЫНОВ Мұрат Жұрынұлы, химия ғылымдарының докторы, профессор, ҚР ҰҒА академигі, «Қазақстан Республикасы Ұлттық ғылым академиясы» РҚБ-нің президенті, АҚ «Д.В. Сокольский атындағы отын, катализ және электрохимия институтының» бас директоры (Алматы, Қазақстан) **Н = 4**

Ғылыми хатшы

АБСАДЫКОВ Бахыт Нарикбайұлы, техника ғылымдарының докторы, профессор, ҚР ҰҒА жауапты хатшысы, А.Б. Бектұров атындағы химия ғылымдары институты (Алматы, Қазақстан) **Н = 5**

Редакциялық алқа:

ӘБСАМЕТОВ Мәліс Құдысұлы (бас редактордың орынбасары), геология-минералогия ғылымдарының докторы, профессор, ҚР ҰҒА академигі, «У.М. Ахмедсафина атындағы гидрогеология және геоэкология институтының» директоры (Алматы, Қазақстан) **Н = 2**

ЖОЛТАЕВ Герой Жолтайұлы (бас редактордың орынбасары), геология-минералогия ғылымдарының докторы, профессор, Қ.И. Сатпаев атындағы геология ғылымдары институтының директоры (Алматы, Қазақстан) **Н = 2**

СНОУ Дэниел, Ph.D, қауымдастырылған профессор, Небраска университетінің Су ғылымдары зертханасының директоры (Небраска штаты, АҚШ) **Н = 32**

ЗЕЛЪТМАН Реймар, Ph.D, табиғи тарих мұражайының Жер туралы ғылымдар бөлімінде петрология және пайдалы қазбалар кен орындары саласындағы зерттеулердің жетекшісі (Лондон, Англия) **Н = 37**

ПАНФИЛОВ Михаил Борисович, техника ғылымдарының докторы, Нанси университетінің профессоры (Нанси, Франция) **Н = 15**

ШЕН Пин, Ph.D, Қытай геологиялық қоғамының тау геологиясы комитеті директорының орынбасары, Американдық экономикалық геологтар қауымдастығының мүшесі (Пекин, Қытай) **Н = 25**

ФИШЕР Аксель, Ph.D, Дрезден техникалық университетінің қауымдастырылған профессоры (Дрезден, Берлин) **Н = 6**

КОНТОРОВИЧ Алексей Эмильевич, геология-минералогия ғылымдарының докторы, профессор, РҒА академигі, А.А. Трофимука атындағы мұнай-газ геологиясы және геофизика институты (Новосибирск, Ресей) **Н = 19**

АГАБЕКОВ Владимир Енокович, химия ғылымдарының докторы, Беларусь ҰҒА академигі, Жаңа материалдар химиясы институтының құрметті директоры (Минск, Беларусь) **Н = 13**

КАТАЛИН Стефан, Ph.D, Дрезден техникалық университетінің қауымдастырылған профессоры (Дрезден, Берлин) **Н = 20**

СЕЙТМҰРАТОВА Элеонора Юсуповна, геология-минералогия ғылымдарының докторы, профессор, ҚР ҰҒА корреспондент-мүшесі, Қ.И. Сатпаев атындағы Геология ғылымдары институты зертханасының меңгерушісі (Алматы, Қазақстан) **Н = 11**

САҒЫНТАЕВ Жанай, Ph.D, қауымдастырылған профессор, Назарбаев университеті (Нұр-Сұлтан, Қазақстан) **Н = 11**

ФРАТТИНИ Паоло, Ph.D, Бикокк Милан университеті қауымдастырылған профессоры (Милан, Италия) **Н = 28**

«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 № **KZ39VPU00025420** 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/>

© «Қазақстан Республикасының Ұлттық ғылым академиясы» РҚБ, 2024

Главный редактор

ЖУРИНОВ Мурат Журинович, доктор химических наук, профессор, академик НАН РК, президент РОО «Национальной академии наук Республики Казахстан», генеральный директор АО «Институт топлива, катализа и электрохимии им. Д.В. Сокольского» (Алматы, Казахстан) **Н = 4**

Ученый секретарь

АБСАДЫКОВ Бахыт Нарикбаевич, доктор технических наук, профессор, ответственный секретарь НАН РК, Институт химических наук им. А.Б. Бектурова (Алматы, Казахстан) **Н = 5**

Редакционная коллегия:

АБСАМЕТОВ Малис Кудысович, (заместитель главного редактора), доктор геологоминералогических наук, профессор, академик НАН РК, директор Института гидрогеологии и геоэкологии им. У.М. Ахмедсафина (Алматы, Казахстан) **Н = 2**

ЖОЛТАЕВ Герой Жолтаевич, (заместитель главного редактора), доктор геологоминералогических наук, профессор, директор Института геологических наук им. К.И. Сатпаева (Алматы, Казахстан) **Н=2**

СНОУ Дэниел, Ph.D, ассоциированный профессор, директор Лаборатории водных наук университета Небраски (штат Небраска, США) **Н = 32**

ЗЕЛЬТМАН Реймар, Ph.D, руководитель исследований в области петрологии и месторождений полезных ископаемых в Отделе наук о Земле Музея естественной истории (Лондон, Англия) **Н = 37**

ПАНФИЛОВ Михаил Борисович, доктор технических наук, профессор Университета Нанси (Нанси, Франция) **Н=15**

ШЕН Пин, Ph.D, заместитель директора Комитета по горной геологии Китайского геологического общества, член Американской ассоциации экономических геологов (Пекин, Китай) **Н = 25**

ФИШЕР Аксель, ассоциированный профессор, Ph.D, технический университет Дрезден (Дрезден, Берлин) **Н = 6**

КОНТОРОВИЧ Алексей Эмильевич, доктор геолого-минералогических наук, профессор, академик РАН, Институт нефтегазовой геологии и геофизики им. А.А. Трофимука СО РАН (Новосибирск, Россия) **Н = 19**

АГАБЕКОВ Владимир Енокович, доктор химических наук, академик НАН Беларуси, почетный директор Института химии новых материалов (Минск, Беларусь) **Н = 13**

КАТАЛИН Стефан, Ph.D, ассоциированный профессор, Технический университет (Дрезден, Берлин) **Н = 20**

СЕЙТМУРАТОВА Элеонора Юсуповна, доктор геолого-минералогических наук, профессор, член-корреспондент НАН РК, заведующая лабораторией Института геологических наук им. К.И. Сатпаева (Алматы, Казахстан) **Н=11**

САГИНТАЕВ Жанай, Ph.D, ассоциированный профессор, Назарбаев университет (Нурсултан, Казахстан) **Н = 11**

ФРАТТИНИ Паоло, Ph.D, ассоциированный профессор, Миланский университет Бикокк (Милан, Италия) **Н = 28**

«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 соединений.*

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/>

© РОО «Национальная академия наук Республики Казахстан», 2024

Editorial chief

ZHURINOV Murat Zhurinovich, doctor of chemistry, professor, academician of NAS RK, president of the National Academy of Sciences of the Republic of Kazakhstan, general director of JSC “Institute of fuel, catalysis and electrochemistry named after D.V. Sokolsky» (Almaty, Kazakhstan) **H = 4**

Scientific secretary

ABSADYKOV Bakhyt Narikbaevich, doctor of technical sciences, professor, executive secretary of NAS RK, Bekturov Institute of chemical sciences (Almaty, Kazakhstan) **H = 5**

Editorial board:

ABSAMETOV Malis Kudysovich, (deputy editor-in-chief), doctor of geological and mineralogical sciences, professor, academician of NAS RK, director of the Akhmedsafin Institute of hydrogeology and hydrophysics (Almaty, Kazakhstan) **H=2**

ZHOLTAEV Geroy Zholtaevich, (deputy editor-in-chief), doctor of geological and mineralogical sciences, professor, director of the institute of geological sciences named after K.I. Satpayev (Almaty, Kazakhstan) **H=2**

SNOW Daniel, Ph.D, associate professor, director of the laboratory of water sciences, Nebraska University (Nebraska, USA) **H = 32**

ZELTMAN Reyman, Ph.D, head of research department in petrology and mineral deposits in the Earth sciences section of the museum of natural history (London, England) **H = 37**

PANFILOV Mikhail Borisovich, doctor of technical sciences, professor at the Nancy University (Nancy, France) **H=15**

SHEN Ping, Ph.D, deputy director of the Committee for Mining geology of the China geological Society, Fellow of the American association of economic geologists (Beijing, China) **H = 25**

FISCHER Axel, Ph.D, associate professor, Dresden University of technology (Dresden, Germany) **H=6**

KONTOROVICH Aleksey Emilievich, doctor of geological and mineralogical sciences, professor, academician of RAS, Trofimuk Institute of petroleum geology and geophysics SB RAS (Novosibirsk, Russia) **H = 19**

AGABEKOV Vladimir Enokovich, doctor of chemistry, academician of NAS of Belarus, honorary director of the Institute of chemistry of new materials (Minsk, Belarus) **H = 13**

KATALIN Stephan, Ph.D, associate professor, Technical university (Dresden, Berlin) **H = 20**

SEITMURATOVA Eleonora Yusupovna, doctor of geological and mineralogical sciences, professor, corresponding member of NAS RK, head of the laboratory of the Institute of geological sciences named after K.I. Satpayev (Almaty, Kazakhstan) **H=11**

SAGINTAYEV Zhanay, Ph.D, associate professor, Nazarbayev University (Nursultan, Kazakhstan) **H = 11**

FRATTINI Paolo, Ph.D, associate professor, university of Milano-Bicocca (Milan, Italy) **H = 28**

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/>

© National Academy of Sciences of the Republic of Kazakhstan, 2024

NEWS of the National Academy of Sciences of the Republic of Kazakhstan
SERIES OF GEOLOGY AND TECHNICAL SCIENCES
ISSN 2224–5278
Volume 1. Number 463 (2024), 238–256
<https://doi.org/10.32014/2024.2518-170X.378>

UDC 622.24.063
UDC 550.383.2

© **K.T. Saparov¹, Zh.R. Shakhantayeva^{1*}, A.Ye. Yeginbayeva¹,
N.Y. Yessenkeldiyev¹, J.A. Wendt², 2024**

¹L.N. Gumilyov Eurasian National University, Astana, Kazakhstan;

²University of Gdańsk, Gdańsk, Poland.

E-mail: zhanna.shahantaeva@mail.ru

THE SYSTEM OF TOPONYMS CHARACTERIZING THE GEOLOGICAL STRUCTURE AND MINERALS OF THE ZHAMBYL REGION

Saparov K.T. — Doctor of Geography, Professor, L.N. Gumilyov Eurasian National University, Department of Physical and Economical Geography, Astana, Kazakhstan

E-mail k.sapar67@yandex.ru, <https://orcid.org/0000-0002-5742-4619>;

Shakhantayeva Z.R. — PhD student, L.N. Gumilyov Eurasian National University, Department of Physical and Economical Geography, Astana, Kazakhstan

E-mail zhanna.shahantaeva@mail.ru, <https://orcid.org/0000-0002-5742-4619>;

Yeginbayeva A.Y. — PhD, associate Professor, L.N. Gumilyov Eurasian National University, Department of Physical and Economical Geography, Astana, Kazakhstan

E-mail aeginbaeva@mail.ru, <https://orcid.org/0000-0001-5520-9301>;

Yessenkeldiyev N.Y. — master's student, L.N. Gumilyov Eurasian National University, Department of Physical and Economical Geography, Astana, Kazakhstan

E-mail nurbek_888@mail.ru, <https://orcid.org/0009-0000-4027-2949>;

Jan Andrzej Wendt — Doctor of Geography, Professor, Gdańsk University, Institute of Socio-Economic Geography and Spatial Management, Gdańsk, Poland

E-mail jan.wendt@ug.edu.pl, <https://orcid.org/0000-0003-1712-4926>.

Abstract. Toponymic research is very complex and often requires geography, history, linguistics, and sometimes archaeology knowledge. Many toponyms are a kind of designation of the local geological structure, composition of rocks, minerals, etc. Applied problems of toponymy play an important role in the study of Kazakh geographical names that have a close connection with geology. In the representation of minerals in local toponyms, there is a historical and archaeological geological justification. In addition, the system of toponyms associated with minerals can complement geographical names with important characteristics and give geologists the necessary information at the stages of discovering ore sources. The article analyzes the geological structure of the Zhambyl region and the formation and features of toponymic systems characterizing minerals. It can be noted that the geological structure and names of minerals play an important role in determining the toponymic strategy of the territory. The ways of their formation and distribution areas are to a certain extent reflected in toponyms.

Keywords: applied toponymy, toponymic forecasting, geological structure, deposits, minerals, toponymic cartography, geographical objects

© Қ.Т. Сапаров¹, Ж.Р. Шахантаева^{1*}, А.Е. Егінбаева¹, Н.Е. Есенкелдиев¹,
А. Вендт², 2024

¹Л.Н. Гумилев атындағы Еуразия ұлттық университеті, Астана, Қазақстан;

²Гданьск университеті, Гданьск, Польша.

E-mail: zhanna.shahantaeva@mail.ru

ЖАМБЫЛ ОБЛЫСЫНЫҢ ГЕОЛОГИЯЛЫҚ ҚҰРЫЛЫМЫН ЖӘНЕ ПАЙДАЛЫ ҚАЗБАЛАРЫН СИПАТТАЙТЫН ТОПОНИМДЕР ЖҮЙЕСІ

Сапаров Қ.Т. — г.ғ.д., профессор, Л.Н. Гумилев атындағы Еуразия ұлттық университеті, «Физикалық және экономикалық география» кафедрасы, Астана, Қазақстан

E-mail k.sapar67@yandex.ru, <https://orcid.org/0000-0002-5742-4619>;

Шахантаева Ж.Р. — докторант, Л.Н. Гумилев атындағы Еуразия ұлттық университеті, «Физикалық және экономикалық география» кафедрасы, Астана, Қазақстан

E-mail zhanna.shahantaeva@mail.ru, <https://orcid.org/0000-0002-5742-4619>;

Егінбаева А.Е. — PhD, доцент, Л.Н. Гумилев атындағы Еуразия ұлттық университеті, «Физикалық және экономикалық география» кафедрасы, Астана, Қазақстан

E-mail aeginbaeva@mail.ru, <https://orcid.org/0000-0001-5520-9301>;

Есенкелдиев Н.Е. — магистрант, Л.Н. Гумилев атындағы Еуразия ұлттық университеті, «Физикалық және экономикалық география» кафедрасы, Астана, Қазақстан

E-mail nurbek_888@mail.ru, <https://orcid.org/0009-0000-4027-2949>;

Ян А.Вендт — география ғылымдарының докторы, профессор, Гданьск университеті, «Әлеуметтік-экономикалық география және кеңістіктік басқару» институты, Гданьск, Польша

E-mail jan.wendt@ug.edu.pl, <https://orcid.org/0000-0003-1712-4926>.

Аннотация. Топонимикалық зерттеулер өте күрделі және көбінесе география, тарих, лингвистика, кейде археология туралы білімді қажет етеді. Көптеген топонимдер жергілікті геологиялық құрылымның, тау жыныстарының, минералдардың құрамының және т.б. өзіндік белгісі болып табылады. Топонимиканың қолданбалы мәселелері геологиямен тығыз байланысы бар және қазақ географиялық атауларын зерттеуде маңызды рөл атқарады. Жергілікті жер атауларында пайдалы қазбалардың көрініс тапқандығының тарихи және археологиялық-геологиялық негіздемесі бар. Сонымен қатар, пайдалы қазбаларға қатысты топонимдер жүйесі географиялық атауларды маңызды сипаттамалармен толықтыра алады және геологтарға кен көздерін анықтау кезеңдерінде қажетті ақпарат бере алады. Мақалада Жамбыл облысының геологиялық құрылымы, сондай-ақ пайдалы қазбаларды сипаттайтын топонимикалық жүйелердің қалыптасуы мен ерекшеліктері талданады. Аумақтың топонимикалық стратегиясын анықтауда геологиялық құрылым мен пайдалы қазбалардың атаулары маңызды рөл атқаратынын атап өтуге болады. Олардың пайда болу жолдары мен таралу аймақтары белгілі бір дәрежеде топонимдерде көрінеді.

Түйін сөздер: қолданбалы топонимика, топонимикалық болжау, геологиялық құрылым, кен орындары, пайдалы қазбалар, топонимикалық картография, географиялық нысандар

© К.Т. Сапаров¹, Ж.Р. Шахантаева^{1*}, А.Е. Егинбаева¹, Н.Е. Есенкелдиев¹,
Я.А. Вендт², 2024

¹Евразийский национальный университет им. Л.Н. Гумилева, Астана, Казахстан;

²Гданьский университет, Гданьск, Польша.

E-mail: zhanna.shahantaeva@mail.ru

СИСТЕМА ТОПОНИМОВ, ХАРАКТЕРИЗУЮЩИЕ ГЕОЛОГИЧЕСКОЕ СТРОЕНИЕ И ПОЛЕЗНЫЕ ИСКОПАЕМЫЕ ЖАМБЫЛСКОЙ ОБЛАСТИ

Сапаров К.Т. — д.г.н., профессор, Евразийский национальный университет им. Л.Н. Гумилева, кафедра «Физическая и экономическая география», Астана, Казахстан

E-mail k.sapar67@yandex.ru, <https://orcid.org/0000-0002-5742-4619>;

Шахантаева Ж.Р. — докторант, Евразийский национальный университет им. Л.Н. Гумилева, кафедра «Физическая и экономическая география», Астана, Казахстан

E-mail zhanna.shahantaeva@mail.ru, <https://orcid.org/0000-0002-5742-4619>;

Егинбаева А.Е. — PhD, доцент, Евразийский национальный университет им. Л.Н. Гумилева, кафедра «Физическая и экономическая география», Астана, Казахстан

E-mail aeginbaeva@mail.ru, <https://orcid.org/0000-0001-5520-9301>;

Есенкелдиев Н.Е. — магистрант, Евразийский национальный университет им. Л.Н. Гумилева, кафедра «Физическая и экономическая география», Астана, Казахстан

E-mail nurbek_888@mail.ru, <https://orcid.org/0009-0000-4027-2949>;

Ян А.Вендт — доктор географических наук, профессор. Гданьский университет. Институт социально-экономической географии и пространственного управления, Гданьск, Польша

E-mail jan.wendt@ug.edu.pl, <https://orcid.org/0000-0003-1712-4926>.

Аннотация. Топонимические исследования очень сложны и часто требуют знаний географии, истории, лингвистики, а иногда и археологии. Многие топонимы являются своеобразным обозначением местного геологического строения, состава горных пород, минералов и т.д. Прикладные проблемы топонимики играют важную роль в изучении казахских географических названий, имеющих тесную связь с геологией. В представлении полезных ископаемых в местных топонимах есть историческое и археологически-геологическое обоснование. Кроме того, система топонимов, связанных с полезными ископаемыми, может дополнять географические названия важными характеристиками и давать геологам необходимую информацию на этапах обнаружения рудных источников. В статье анализируется геологическое строение Жамбылской области, а также формирование и особенности топонимических систем, характеризующих полезные ископаемые. Можно отметить, что геологическое строение и названия полезных ископаемых играют важную роль в определении топонимической стратегии территории. Способы их образования и ареалы распространения в определенной степени отражены в топонимах.

Ключевые слова: прикладная топонимика, топонимическое прогнозирование, геологическое строение, месторождения, полезные ископаемые, топонимическая картография, географические объекты

Introduction

Any science develops according to its internal laws and must have a mandatory applied direction of science that arose at the junction of several sciences. The study of toponyms is situated in this scientific approach. It covers a range of social and political issues (Rose-Redwood et al., 2010: 455) as well as toponymy in a wide range of physical geography (Wendt, 2017: 4). Applied problems of geographical toponymy include toponymic forecasting of mineral resources at the stage of preliminary research; ecological and toponymic problems of nature and society; forecast of unfavorable geomorphological and hydrological processes; toponymic mapping. Their study will help to understand the complex trend in the knowledge of the nature of the geographical shell and solve these data in national economic problems.

During the exploration of mineral deposits, K. Satpayev widely used in his research a new scientific toponymic method, which only at a later stage began to spread widely. The nomads were able to arrange the geographical names of the region where they lived with amazing accuracy and deep significance. In the toponymy of Kazakhstan, a scientist who has a comprehensive knowledge of geographical names was able to find a justification for his assumptions about the richest deposits in the land of Kazakhstan. For example Zhezdy, Kengir, Korgasyntau, Temirtau, and Kenkorytkan, etc. there is clear evidence in the names that mining in these places has been going on since ancient times. So K. Satpayev was able to use toponymy in practice until its full formation (Saparov et al., 2018: 35).

The place of applied toponymy in the study of toponymic evidence of physical and geographical conditions, mineral resources, unfavorable geomorphological and hydrological phenomena, population migration from one geographical landscape to another, as well as issues of toponymic mapping are considered. Any science that is considered independent develops according to its internal laws, and when forming at the junction of several sciences, an applied orientation necessarily develops (Yeginbayeva et al., 2017: 115). Including minerals, geographical names describing the geological structure played an important role in the discovery of deposits.

The territory of Zhambyl region is distinguished by a diverse geological and tectonic structure. The history of the geological development of the territory of the region allowed the formation of various relief structures and is clearly reflected in the terms found in the composition of toponyms in the territory.

Research methods and research materials

The concept of "applied toponymy" and its development as a new direction in science originates in the Soviet Union in 1965. It began to be reflected in articles on the use of toponymic data in the study of minerals, in geological exploration. Later, some questions on this topic were considered in the works of M.A. Bubnova, F.S. Salikhov, D. Aitmatova, H.L. Khanmagomedov, and others.

Studying the geographical problems of applied toponymy, we relied on the views of M.M. Golubchik, S.P. Evdokimova, G.N. Maksimova, A.M. Nosonova, H.L. Khanmogomedov. In turn, they, guided by the thoughts of the English geographer Peter Haggett, write that he insists on abandoning concepts formed at the junction of natural

and social sciences and focusing on the human environment and its spatial relationships, as well as on regional structures. "Geography is a science dealing with the uneven distribution of the natural environment and human living conditions for society with a sharp difference in the region. In the works of Kazakhstani toponymic scientists K.T. Saparov and A.E. Eginbayeva, an exhaustive description of the distribution areas of toponyms is given, emphasizing the applied importance of toponymy in determining the minerals of Saryarka (Saparov et al., 2018: 35).

The use of its data in solving the problems of determining the features of relief and migration of peoples in applied issues of toponymy, as well as the study of the practical significance of geographical names for the needs of geological exploration. The Republic of Kazakhstan has a large mineral resource base. In the republic, 71.9 % of the balance reserves of phosphorites, 68 % of fluoride spar, 8.8 % of gold, 3 % of copper, and 0.7 % of uranium are concentrated on the territory of the region. The region is rich in non-ferrous metals, barite, coal, decorative and technical stones, and building materials. Several natural gas deposits have been explored within the Shu-Sarysu depression (Abdullina et al., 2019: 664).

The use of mineral wealth began with the birth of mankind and often played a decisive role in its progressive development. Initially, the meaning was random and homogeneous, later the search was purposeful, mining from the surface deepened into the bowels of the earth (Conedera et al., 2007: 729).

The history of the mining and manufacturing industry is reflected in the toponymy of various regions. Therefore, in our opinion, the use of toponymic data is appropriate for studying some aspects of the history of the mining industry, the study of which, in turn, is important not only for studying the economy of ancient societies but also for clarifying some modern geological works and metallurgy problems (Basik, 2006). Based on the analysis of the geographical names of the studied territory, taking into account its geological, metallogenic, landscape, and other features, it is possible to make a map of the geological structure and names of minerals in toponyms, which can mainly contribute to the preparation of a forecast assessment of this territory for minerals. (Smagulova et al., 2021: 1004).

A number of scientific methods of information processing have been applied in the research of toponyms characterizing the geological structure and minerals of the Zhambyl region. The paper uses the method of basic toponymic analysis or folk geographical terms, which allows us to study changes in natural complexes as a result of their economic development. The use of cartographic and geoinformation methods made it possible to show the spatial distribution of toponymic and historical - geographical phenomena and facts. When processing the initial data, a statistical method was used.

Results and discussion

The absolute majority of toponyms of the Zhambyl region include National geographic terms reflecting some features of the earth's surface, actively participating in the formation of toponyms of the studied region (Konkashpaev, 2012: 3). Kazakh geographical terms reflect the natural features of the territory of Kazakhstan, while the vast majority of them relate to the components of relief, hydrography, vegetation, and

wildlife, and partly to the climate, surface cover, and landscape as a whole. Kazakhs, having previously mastered a vast territory, were able to effectively use natural resources in the development of the economy (Khanmogomedov, 2011: 3).

Analyzing the toponymic space of Zhambyl region, we found that there are many names formed on a geological and geomorphological basis. Kazakh folk-geographical terms and names can be a valuable source in studying the dynamics of the landscapes of the territory, thus connecting toponymy with historical-geography and archeology. Therefore, folk-geographical terms are actively involved in the process of forming geological structure, mineral names, thereby determining their semantic load. The study of Kazakh geographical names in various aspects allows us to study toponymic problems that have arisen over many years (Khanmogomedov, 2011: 3).

Toponymic science, which comprehensively studies geographical names, is closely related to geography, language, and history because of the specifics of the goals that it sets for itself. Toponymic research is very complex and often requires geography, history, linguistics, and sometimes archaeology knowledge. Many toponyms are a kind of designation of the local geological structure, composition of rocks, minerals, etc. Therefore, for the formulation of such terms and names, you can get a lot of geographical information from Kazakh geographical names that have a close connection with geology (Khayitova, 2020: 19).

Geological science was at the head, studying the nature of Kazakhstan in the opening of large-scale industries, creating for the benefit of the people. Geology is the most important in the natural sciences, it studies the structure, composition, origin, and development of the Earth, as well as the patterns of formation and distribution areas of minerals, rocks, and minerals that make up the Earth's crust, as well as the history of development (Ismatova, 2021).

Zhambyl region is an administrative-territorial part of the south of the Republic of Kazakhstan. It is located between the Chu-Ili Mountains and the western coast of Balkhash, the Karatau ridge, the Kyrgyz Alatau, and Betpakdala. The region borders the Kyrgyz Republic in the south, a Turkestan region in the West, the Almaty region in the east, and the Karaganda region in the north (Penko, 2018: 77).

The relief of the territory of the region has been formed for a long time as a result of the influence of external and internal forces of the Earth. The territory was repeatedly flooded by the sea, transformed into the land, and then flooded again with sea water. Mountains formed on the earth, which were subsequently destroyed and turned into plains. Such complex processes have been repeated for tens, hundreds of millions of years. As a result, the modern relief of the territory of the region was formed (Peteet, 2005: 153).

The territory of the region occupies the west of the Ural-Mongolian folded belt of the East European Platform. The folded belt adjoins the Turan plate (depression) in the southwest. The upper cover of its eastern part is formed by marine, continental, terrigenous, carbonate-terrigenous deposits (up to 4–5 km thick) from the Upper Triassic to anthropogenic. The foundation consists of geosynclinal and quasi-platform geological formations from the Cambrian to the Triassic, the composition of which varies, and is cut

by cracks, and longitudinal intrusions. In the Karatau region, there are a large number of rocks that have undergone Precambrian metamorphosis, silicon-shale-vanadium and phosphorous carbonate-terrigenous deposits of the Cambrian-Ordovician. The Caledonian belonging to the Kokshetau-Northern Tien Shan folded system occupies almost the entire Betpakdala. The region is rich in mineral deposits. There are large gas fields (*Amangeldy, Maldybai, Anabai, Northern Usharal, Usharal-Kempirtobe*), copper (*Shatyrkol, Zhaysan*), lead-zinc (*Rodnikovskoye*), gold (*Akbakai*), Diamond (*in the Shulle mountains*), phosphorite (*Karatau region*), coal (*Talas-Karatau*), table salt, gypsum, saltpeter, etc. ores, some are mined (Saparov et al., 2018: 35).

The ancient history of the Zhambyl region dates back to the Early Paleolithic era. There were places most favorable for the settlement of ancient people - the Karatau Mountains. Stone tools found on this land along the *Arystandy* River indicate that ancient people hunted and were engaged in gathering. They were convenient in processing of flint, chalcedony and quartzite, and when piling the edges, sharp, cutting rocks were used as disc-shaped shombal mowing tools. Most of the first tools were made from Maltese stone, the main source of raw materials. It is known that the archaeologist K. Alpysbaev found in Karatau tools "chopper", and "chopping" in processing techniques are close to the early Stone Age in the countries of Burma, Vietnam, and India. Such tools were found at sites in the Talas Valley in *Berikazgan, Tengirkazgan, Kyzyltau*. These monuments are the earliest complexes in this region and are widely known to scientists around the world. The sites of Kemer-1–3, 25 km northeast of Karatau, Degeres near the Chartymbai hill of Talas district, Kyzyl-Rysbek south of the village of Akkol belong to the Acheul-Mustier era in this region (Khanmogomedov, 2011: 3).

During the Middle Paleolithic or Mustier period, a modern hydrographic network began to form. At that time, people were located in ravine gorges, at the intersection of the cape, ravine, and on the outskirts. Human thinking has increased. They used fire, began to feel the difference between life and death, and the first religious beliefs were formed. There have also been changes in the use of stone tools. The manufacture of tools from disc-shaped stones has become widespread (Stewart, 1985).

The fact that the development of deposits in the Zhambyl region has been known since ancient times is evidenced by historical and archaeological data. Traces of the first excavations were discovered by archaeologists in the Bronze Age in 1500-1700. In the Bronze Age, some types of precious stones began to be used, such as copper, gold, tin, etc. Toponyms characterizing the relief and geological structure on the territory of the region include: *Keregetas, Kuygensandyktas, Kapkaktas, Shakpak, Peschannaya* (sandy), *Mysty* (copper), *Tuz* (salt), etc (Konkashpaev, 2012: 3).

It is known that the most necessary thing for the production of the metal is coal with a high fuel temperature. Kazakhs knew from the very beginning what coal is, and its advantages. This is evidenced, first of all, by the word "komir". After all, the word "komir" is based on the geological understanding of the people. In the Kazakh language, all the words "kom", "komu", and "komilgen" are associated with the fact that something is in the bowels of the earth. As we know, coal is in underground (Sergeyeva et al., 2022: 111).

One more word on everyone's lips «do not say that the coal is weak, it will melt even an iron». This is the essence of folk art, which means that coal is needed not only for fuel but also for the digestion of iron (Emilio, 2013: 106). These data indicate that the caves in the Kazakh steppes contain a lot of information about the life, concepts, and abilities of descendants who lived in these steppes.

Also in Kazakh folklore, such characters as Shoynkulak, Er Tostik, Zhylan Bapy, Karamergen, and Tausogar, travel underground, Koltauysar who takes out a copper cauldron from the bottom, Shalkuyryk Shubar horses are locked in brass sheds, primarily as motifs generated by the wonderful imagination of indigenous metallurgists. This is how concrete evidence of spiritual continuity shows (Yeginbayeva et al., 2017: 115).

The widespread development of metallurgical production in the Kazakh steppe in ancient times contributed to the birth of works of art in the pattern of wisdom (animal style), common in this huge nomadic region. Products made in the Scythian wisdom pattern are made of non-ferrous metals, such as copper, bronze, gold, and silver (Smagulova et al., 2021: 1004).

The authors of the ancient world especially note the development of the production of non-ferrous metals when they talk about the nomadic tribes that inhabited the modern Kazakhstan region, which was part of the Scythians. The father of history, Herodotus, said: "There is a bronze and a golden horseman in this country. Their weapons, such as spears, arrows, and axes, are made of brass, but covered with gold, from headdresses and waist cuffs to horse harnesses." In this regard, I recall the "man in golden clothes" found in the doorway near Almaty (Emilio et al., 2013: 106).

Toponymy, which by N.I. Nadezhdina's precise definition is the "language of the earth", and is also closely related to geology. Many toponyms are a reflection of the geological structure of the Earth, the composition of rocks, minerals, etc. Therefore, the interpretation of such terms requires knowledge about geology, which can be obtained from Kazakh geographical names.

The nomadic Kazakh population in the vast territory of the region, full of physical and geographical contradictions that have arisen over the centuries, created a system of concepts about the surrounding nature that determine the features of the morphology of the relief, hydrography, soil, and vegetation cover, wildlife, mainly the composition of rocks and types of minerals (Yeginbayeva et al., 2017: 115).

Names associated with the extraction and processing of minerals traditional types of household management formed the basis of a number of names in different parts of the world. In the countries of Eastern Europe, there are names of *Bronniki*, *Bronnitsy*, *Bronnoye* associated with metalworking. The Old Russian word armor was called metal armor and shields of soldiers. And *bronniki* are called the master manufacturers of these products. Workshops for the manufacture of weapons *Bronnitsy*. There are names *Katereria* ("stone chisel"), *Kerbuneria* ("place of coal burning"), *Vereria* ("place of lime extraction") in Moldova. And the production of *Halle* salt in Germany (*Hala* in Celtic means "salt"), *Salzburg* in Austria (German for "salt city"), *Usolye*, *Usolye-Siberia*, *Soltsy*, *Soligalich*, *Solvichegorsk* in Russia, *Banya-Kotovskaya*, *Stara-Banya*, *Banya-Svirskaya* in Ukraine (in Ukrainian, *banya* means salt shaker), which is reflected in the names (Konkashpaev, 2012: 3).

Coal mining is depicted in the names *Uglegorsk, Uglezavodsk, Uglekamensk, Ugoluralsk, Shakhty, Shakhtinsk, Uglebulak* in Kazakhstan, *Tashkumyr* in Kyrgyzstan. The mining industry is reflected in the names *Zhezkazgan, Temirtau, Rudny, Khromtau, Nikeltau, Shaba* (DR Congo, "copper" in Swahili), and the Andes ("copper" in Quechua). And the name of the *Selemdzha* River in the Far East of Russia is associated with the word Salem – "iron" in the Evenk language (Saparov et al., 2018: 35).

The following oronyms characterize the appearance of relief forms: *Kapaktas, Shokparly, Beriktas, Kuygensandyktas – stone ointment, Keregetas, Kamennaya, Shaqpak*. In addition, these names have a basis for comparing toponyms associated with the names of fossil resources in the territory with geological data. Because many toponymic names provide rich information about the textural features of fossil rocks (table 1, figure 1–3)

Table 1 – Collection of toponyms reflecting the minerals of the Zhambyl region

Names justifying minerals	
gold	Altyn, Altnaryk, Altnkazgan, Altnkazgansai, Altnmola, Altyntaqyr
copper	Qyryqbaqyr
granite	Granitny, Granitogorsk, Qyzyltay (Village, Hill, Mountain)
lead meerkat	Zhosaly
ore	Kentau, Ken
copper	Mys, Mysty, Koktas, (mountain, cemetery, rill, settlement)
iron	Qaratas (village, hill, mountain, river, hillock)
salt	Qaratuz (settlement, rill), Qyzyltuz (lake, river), Sortuz, Tuz, Tuzasu (river, source), Tuzbulak, Tuzdala (hill, river) Tuzdy, Tuzdyaral (hill, river), Tuzdyken, Tuzqainar, Tuzkol (lake, river, hill), Tuzsurat, Tuzsyz
phosphorus	Qaratau (city, mountain, mine, station), Zhanatas (city, station).

The names of ancient deposits Mynshunkur, Shuryk, etc. are widely preserved in toponyms and are reflected in the long-term research of A. Margulan is an additional source of data on ancient names in geological exploration. In the border regions of Central Kazakhstan and Southern Kazakhstan, the toponyms Altyntobe, Altnkazgan, Mynshunkur, Kentobe, and Kenshoky provide information about the development of ancient mining in the region. Most of these names are concentrated in the northern part of Karatau in the foothills, and some are located near settlements with old embankments (Konkashpaev, 2012: 3).

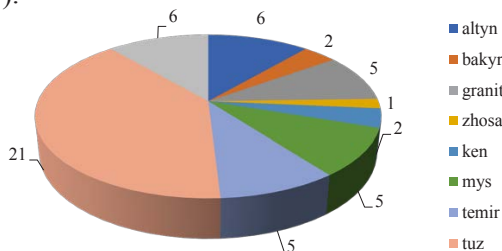


Figure 1 – Description of toponyms reflecting the minerals of the Zhambyl region

K. Satpayev, who has worked all his life in the Zhezkazgan region in the field of extensive exploration, was especially surprised that the geographical names of this region correspond to the names of minerals in his geological search. For example: Maytobe, Rudny, Aktau, Borlytau, Zhezkazgan, Zhezdy, Svintsovy, Ugolny, Mysbulak, Altynbel, Suzhanar. Ironically, deposits corresponding to their names appeared on all these lands. Academician K. Satpayev used toponymic methods in the study of minerals and minerals (table 2, figure 2–3)

Table 2 – Name of substantiating building materials of Zhambyl region

Names on which building materials are based	
clay	Balshik, Balshyk
solid rock	Beriktas, Kamenistaya Griva, Kamenistiy Uval (settlement, hill), Kamenka, Kamennaya Balka, Kakbaktas, Kokpactas (river, hill)
magenta	Karakoshkyl
gravel	Gravyiny
sand	Peschannoe, Peschany
red Stone	Kyzyltas (farm, river, mound)
flint	Shakpak (village, mound, branch, river, station), Shakpakty
cement	Cementnaya, Cemzavod

The presence of certain minerals and deposits is evidenced by the names *Altynkazgan* – gold mining, *Altynkazgansay* - gold mining sai, *Koktas* - blue stone, sandy sandstone, *Kyzyltau* - depending on the color of metals mined in the region, *Mysty* — copper mining land, *Tuz* -salt habitat, etc. In this region, the category of toponyms associated with the word *Altyn* includes *Altynkuduk* well, *Altynbulak*, *Altynaryk* auyl, *Altynkazgan* wintering, etc. (Yeginbayeva et al., 2017: 115).

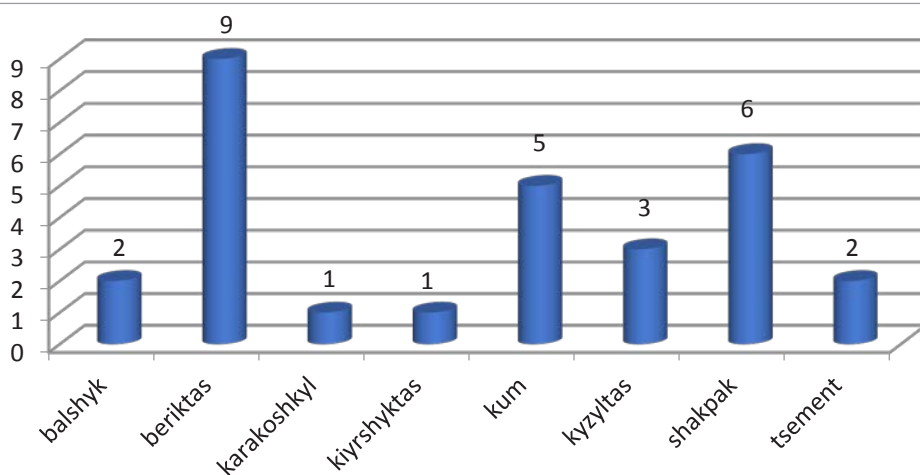


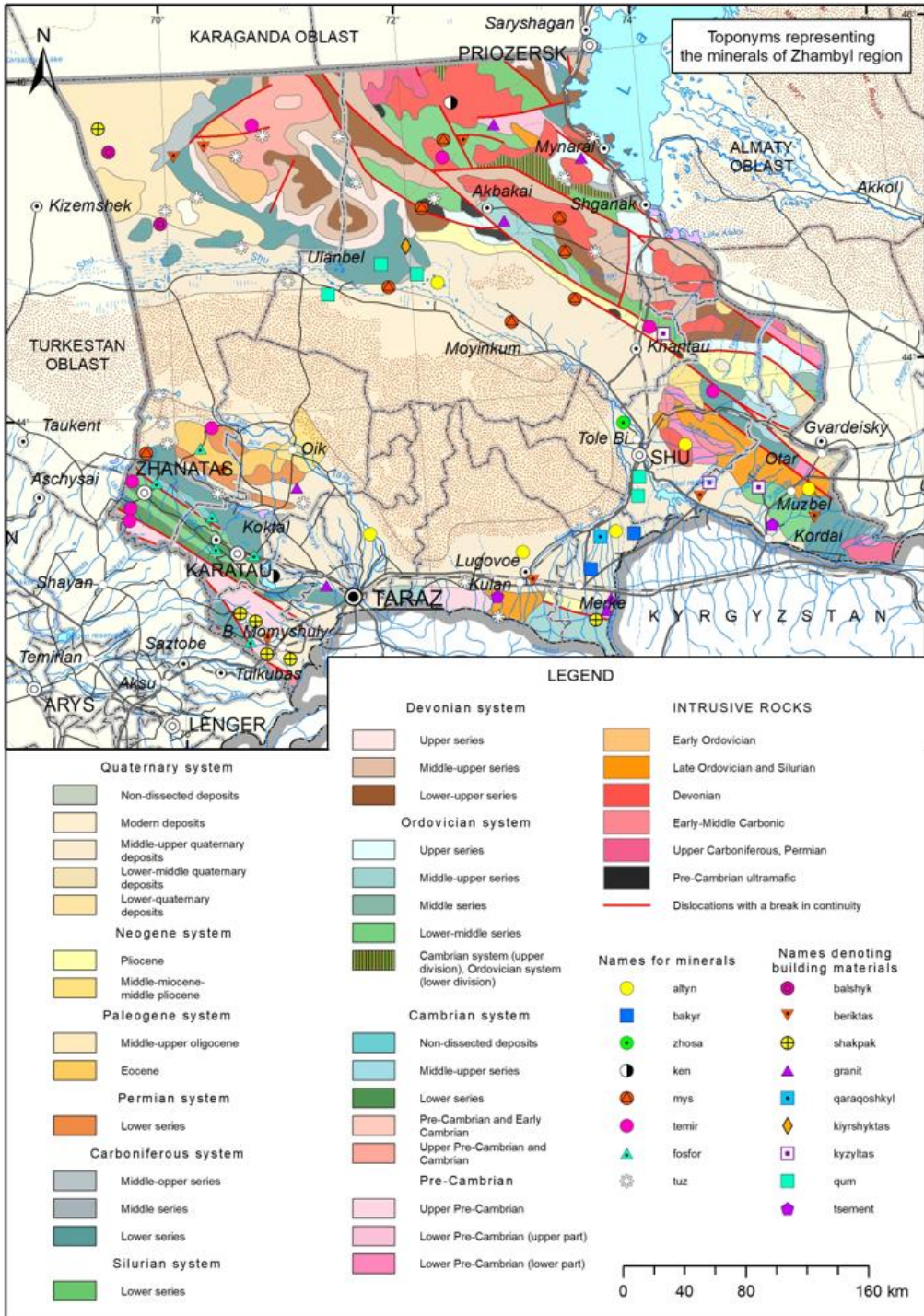
Figure 2 - Geographical names justifying the construction materials of Zhambyl region

As in other regions of Kazakhstan, there are toponyms formed by the word *zhosa* in the Zhambyl region. So, *Zhosaly* is a tract, a river, old settlements, etc. Since ancient times, *zhosa* have been widely used as white paint, as well as in connection with ritual cosmetics and have long been known to the population. Especially in the Saka times, when a small pocket with a mirror was placed next to the buried "golden man". From historical works we learned that in the region of nomads of Kazakhstan and Siberia, *zhasa* is widely used as a paint (Khayitova, 2020: 19).

Zhanatas is formed by a combination of the words "new" and "stone". Outstanding geologists D. Bezrukov and B. Himmelfarb contributed to the name of the city. When it was first mapped under the name "New Stone", B. Himmelfarb translated into Kazakh and designated the deposit. The meaning means "renewed rocky land, country. After the discovery of phosphorus ore at this place, complex facilities were built for the preparation of phosphorus raw materials for ore processing. It is always known that the ore is extracted from a mountainous and rocky area. So, in connection with the replacement of the word stone with the word ore, the name *Zhanatas* appeared, associated with the concept of "place of origin of new ore", "new deposit".

Karatau -as quoted by E. Koishybayev (1985) according to E.Murzaev, "the word black in this name is associated with color, because snow does not lie in Karatau all summer, as in other mountains." *Shakpak* is a five-class railway station of Zhualynsky district of Zhambyl region. Along the Zhambyl-Tulkubas highway. The name comes from the name of the nearby Flint Rocks mountain. *Kakpaktas*-named because of the similarity of the type of earth with a stone cap (Konkashpayev, 2013: 3).

Granitogorsk is a name formed from the words "granite" and "mountain" in Russian. Meaning: "this means that there is granite in the nearby mountains." The red granite of Kordai is not inferior in quality to the granite of Ukraine, the Urals, and Korea. *Balshyk*-viscous clay, liquid clay, muddy earth - means a swampy area (Silt, taty, swamp). *Kiyrshyktas* (gravel), stone, stone-sandy, *Peschanyi* - sand; used in the sense of sand. Many geographical names are found in the composition. For example: Moyinkum, Karakum, etc. (Basik, 2006).



The concentration of salts in natural waters is indicated by the names *Aschybulak* - salt rill, *Aschysai* - salt sai, *Tuzkol* - salt lake, etc. The name *Tuzkol* is associated with the presence of salt in the lake, suitable for mining. In addition, in Lake *Tuzkol*, located in the foothills of the northeastern Karatau, huge reserves of bloedite have been discovered, which is one of the most important sources of sulfate-magnesia fertilizer. Names indicating salt deposits are found in toponyms. For example: *Ekibastuz*, *Tuzdykol*, *Tuzkala*, *Solvetka*, etc. (Smagulova et al., 2021: 1004).

Some Kazakh toponyms reflect the specifics of the geological structure of a particular site. An example is the widespread name Keregetas-mesh stones. This term usually refers to the crests of rectangular rocks consisting of thick tiled sandstone, limestone, or granite, the cracked parts of which resemble the latticed walls of a yurt. In granites and sandstones, *Kakpaktas* (mattress-shaped stone) is most often formed on a granitoid substrate. Other gold deposits are also known on the territory of the Zhambyl region, located in areas called *Zhylandy* – snake place, *Zhylandykol* – Snake Lake, *Zhylantau* – Snake Mountain. In the works of the famous scientist K. Satpayev "zhylandy", the presence of non-ferrous metal ore was noted. The scientist was able to combine toponymy with the life experience of the people on a scientific basis and implemented the applied method of toponymy. *Zhylantobe* is a place located at the foot of small hills, on a snake hill full of snakes (Gessko et al., 2013).

In rocks, granites, and sandstones, due to weathering, *Tesiktas* (perforated stone) is often formed. For example relief of rocks *Kotyrtas*, *Sandyktas* (stones similar to a chest) – parallelepiped features in granites, *Domalaktas* (round stones). The relatively common name *Zhosaly*-lands with clay usually refers to weathered rocks of the oxidation zone mineralized with brown iron.

The Akbakai gold deposit is located 60 km northeast of the village of Moyinkum, Moyinkum district. The deposit, discovered in 1968 by geologist D. Duysenbekov, consists of 5 main verticals (Basty, Tyukin, etc.) and 9 obliquely lying lines. It was founded in 1977 in connection with the discovery of gold ore (Smagulova et al., 2021: 1004).

The healing mud of Akkol is soft silty sediments removed from the shores of Akkol in the southwest (30 km) of the city of Zhambyl and used for the treatment of diseases. The healing mud of Akkol is located at the foot of *Ulken Buryl* Mountain, at an altitude of 700 m above the sea surface. The area of the lake is 2.5 km², several freshwater springs flow into it. Its medicinal clay was studied from 1932–1934, the total area is 0.2 m, and the total reserve is 65,000 m³, including a useful reserve of 15,000 m³. It treats limbs, gynecological diseases, etc. The name in the meaning of "clean, fresh lake".

Akkum is a sandy peninsula south of Lake Balkhash. It is located in the Moyinkum district. The lake flows into the lake from southwest to northeast. Area-23 km², length-9 km, width-2–4 km. The coast is sandy. The land is bulk and sandy. Calligonum, Ammodendron, Krascheninnikovia, Tamarix, and reed grow on the shore. Akkum-winter cattle breeding. The average annual precipitation is 150-200 mm. The average temperature in January is 15–16° C, and on July 22–24° C. "Akkol" was formed based on the Karakul sheep farm. A name formed from the words white (adjective) and sand

(noun). Meaning: means "loose sand", sand is used as a building material (Abdullina et al., 2021: 22).

Aksai phosphorite ore is located in the Talas district, 40 km west of the city of Karatau. Karatau is part of the Phosphorous Basin. The length of the deposit will be 8 km, width-100 m. It was discovered in 1938 by geologists P. L. Bezrukov and B. M. Himmelfarb. Fundamental exploration work was carried out from 1951–1956. The deposit was developed by an open-pit mine in 1957–1987, and in 1987 the ore was extracted from an underground mine. Aksai phosphorite ore consists of the Chulaktau formation, belonging to the Low Cambrian. The lower, non-stellar part of this formation consists of siliceous dolomites and dolomitic limestones (3–15 m thick), and phosphorite flints (3–10 m thick). Above their thickness is 1.5–12 m, the average content of phosphoric anhydride (P_2O_5) is 20–27 % of 4 ore layers, lithol, the composition of which is mainly phosphate, siliceous, and carbonate. The resulting phosphorite ore stone is processed at the Karatau Mining and Chemical Plant. The name is formed from the words white (adjective) + sai (noun). In the second syllable of the name, the term sai means "river, water", pronounced in the Azerbaijani language in the person of tea. The meaning of the name Aksai may be because the dell turn white.

Akyrtas is an ancient construction site in Kazakhstan. It is located 40 km east of the city of Taraz. The building materials are known as "Akyrtas" because of their similarity to mangers that lay stone and grass for livestock. It was built on top of a mountain by a square project so that it could be seen from afar. Currently, the preserved spurs of the walls are about 160, 146, and 140 m. The dimensions of the walls are 40x70x70 (80) cm. they are made of large stone blocks. The mound has 4 gates, one in the north and three in the south. Residential buildings consist of a complex of office and utility rooms grouped around a courtyard. White in the ancient Turkic language ("agu " verb.) + - yr (aff.) and the name formed from the words tash. "Akyr" is a tray for livestock feed, and "tas" is a tray that tells what the stone is made of (Saparov et al., 2018: 35).

The Amangeldinsky gas field is located in the Talas district, 165 km north of the city of Taraz. The gas condensate structure was discovered by seismic studies in 1974, in 1975 a gas fountain was shot down from a deep search well. The dimensions of the structure in the Lower Permian productive layer are 13.5 x 7 km; the thickness is about 400 m. Industrially significant gas horizons lie in a layer of bottom Permian-Lower carbon deposits. The gas ore is concentrated on high hills of a folded structure, the reservoirs consist of sandstone, siltstone, limestone. Their porosity varies between 10–22 %. The initial reservoir pressure reached 21.3–24.8 MPa, and the daily productivity of the well was 213.4 thousand m³.

Granitogorsk station is a settlement in the Merensky district, the center of a rural administrative district. The district center is located 27 km southeast of the village of Merken, 12 km south of the Almaty-Tashkent highway, on the banks of the Aspara River. The nearest railway station is Shalduar (18 km). It was founded in 1954. Granitogorsk has a granite quarry, an auto repair company, an expedition of the Kazakh Research Institute of Mineral Raw Materials, a secondary school, a hospital, etc. (Peteet, 2005: 153).

The Zhaysan copper deposit—the Zhaysan copper ore, located in the Shusky district, 55 km northwest of the city of Shu, has been known since the Eneolithic, the ancient Saks mined ore and fused copper. 1906–1915. meanwhile, the British mined ore. Systematic geological exploration works were carried out in 1950. The ore site consists of intrusive Ordovician rocks, including the Northern and eastern parts of quartz syenite-diorites of the Kordai complex, and the remaining areas of biotite granites of the tentacle complex. The ore field is divided by a system of faults into blocks. In the fault belts, there are micro-diorite and diabase-porphyrite adhesions mating with ore bodies. A name formed from the name of a person.

Zhambylgips is a manufacturing enterprise, a closed joint-stock company. It is located 29 km west of the city of Taraz, at the foot of Ulken Buryl Mountain. Zhambyl Gypsum Plant was established based on the Ulken Buryl gypsum deposit in 1961. A unique enterprise in Kazakhstan in this industry. In 1980, 1 million tons of gypsum per year were produced for cement plants in the former USSR. Now 70–80 tons of construction gypsum are produced per day and shipped to the enterprises of construction materials in the republic. In addition to the main product, consumers are offered: marble flour, white plaster, dry construction mix, and corrugated pile slabs based on gypsum. Geological reserves of large Boreal ore reach at least 50 years (Smagulova et al., 2021: 1004).

The new Zhambyl Phosphorus Plant is a production enterprise, the Zhambyl branch of Kazphosphate LLP, located 20 km west of the city of Taraz, at the foot of Bolshoy Buryltau. The company was launched in the 80s of the 20th century. Created based on JSC "Nodfos". The area of 645 hectares, the main production facilities are: yellow phosphorus production workshop (design capacity 80 thousand tons per year), thermal phosphoric acid production workshop (120 thousand tons), sodium tripolyphosphate production workshop (120 thousand tons). The company has introduced the technology of obtaining the world's first yellow phosphorus from agglomerate fine raw materials phosphorite. The main consumers are Germany, Hungary, Russia, Czech Republic, Poland, Ukraine, and Moldova (Stewart, 1985).

Zhanatas is a city, in the center of the Sarysu district. The regional center is located 170 km northwest of Taraz, on the northern slope of the Karatau ridge in the gray-earth semi-desert belt of the Zhusan, Kurulyk, Bayalysh Uske mountains. Today, a branch of Kazphosphate LLP – the Karatau mining complex and the EuroChem company are constantly operating in the city. These production capacities for the first half of the year produced 293.7 thousand tons of phosphorus products. Currently, the limited liability partnership EuroChem-Karatau is building the second stage of a chemical complex for processing phosphates in the city of Zhanatas. The complex was fully launched in 2019. The name means "a newly built city on a rocky, ore land" (Smagulova et al., 2021: 1004).

Kokjon phosphorite ore is located 12 km southwest of the city of Zhanatas, Zhambyl region. The deposit was discovered in 1939. The studies were conducted in 1955-1965 and 1969-1971. produced. The ore area consists of 4 sections (Araltobe, Kyshtas, Krivytope, Akkum). Kokjon phosphorite is adjacent to the deposits of the Middle Cambrian period (Aktau formation was in progress). The matte rocks consist of pebbles,

shale, sandstone, and mudstone of the Lower Cambrian. The average thickness of the phosphorite layer is 15 m in expanded clay, 10 m in Aralt, and phosphorite-silicon rocks 2–2.5 m thick are found in the Phosphorite layer. It was found that at a depth of 400–600 m in ceramate and 300 m in Araltobe, there is also a phosphorite layer. Phosphorite crystal structure closed crystal. Granular, oolitic; its granules harden in combination with carbonate, siliceous, and phosphate substances; the content of P_2O_5 ranges from 22.8 % to 36 %. Kokjon phosphorite ore is one of the large ores of the Karatau phosphorite basin. The deposit is being developed in an open way (Konkashpaev, 2012: 3).

The Maly Karatau Ore District is an ore place extending to the northwest of the city of Taraz, including the anticlinal of the same name. The main ore riches are associated with sedimentary layers of the Paleozoic. The famous Karatau phosphorite massif, overlain by Lower Cambrian strata, which gave the name to the ore region, extends for 100 km and unites 45 deposits. The largest: Aksai phosphorite ore, Kokjon phosphorite ore, and Sholaktau phosphorite ore. They are the raw material base of chemical industries located in the cities of Karatau, Taraz, and Shymkent. The total reserve of the Maly Karatau ore district are projected to exceed 2 billion tons. There are now hydrothermal lead-zinc deposits in the area, such as Suleymensai, and Baizhansai, whose reserves are depleted. Limestone, dolomite, gypsum (Boryl), flint (Shabakty, Kyzylaut), celestine (Tuzkol), as well as small reserves of coal (brown coal), are common in the Malo-Karatau ore region. Gold ores belonging to the quartz-linear formation have been explored in the Kokjon ridge. Small tungsten-molybdenum and ferromanganese ores are associated with Caledonian intrusions. They have no production value (Ismatova, 2021).

The Karatau vanadium basin is a region in the South Kazakhstan region, in the northwestern part of the Karatau ridge, where vanadium ores are concentrated. The first observational work was carried out here in 1941, and research - from 1943–1951. The ores of the Karatau vanadium basin are concentrated in the silicon-vanadium formation of the Cambrian. On the 100-kilometer layer with the village of vanadium, there are such large deposits as Balasauskandyk and Koramsak, Taldyk, Zhogargyran, and Koskol-Zhanbek deposits (Abdullina et al., 2021: 22).

The Karatau polymetallic belt is located in the South Kazakhstan region, on the big ridge of Karatau. The deposits are concentrated in carbonate rocks and consist of intertwined ore bodies. Ore mining is associated with rocks of high Devonian and low Carboniferous. Lead-zinc ore is determined by lithological features. Formations in it consist of three facies: Kyzyltas — in the Northwestern and Central Karatau parts; Aksoran- in the Baizhan ore region. Low-lying carbonate rocks are developed in Central and southeastern Karatau. Structural elements are of great importance in the localization of defense zinc mining. The main Karatau fault determines not only the location of ore facies but also the boundaries of various metallogenic skirts. The vast majority of all deposits are located on the southwestern side of this fault. Ore formation is observed in layered structures, mainly in the closed parts of the Hercynian folds (Khanmogomedov, 2011: 3).

Karatau phosphorite massif is a region in which phosphorite ores of Zhambyl and South Kazakhstan regions are concentrated. Northwest of the city of Taraz is the Karatau

phosphorite massif with a length of 100–120 km, and a width of 25–30 km (Ismatova, 2021).

Kyzylkeshek is a copper smelting point 2 thousand years BC. Moyinkumsky district is located 48 km southwest of the village of Mynaral. This place was discovered in 1968 by geologists — V.A. Kostyushin and V.V. Volobuev. In the smelting of copper, bowls made of baked clay were used (Konkashpaev, 2012: 3).

Sarytas is a manufacturing enterprise, an excision, a company, and a former Karatau chemical plant. It is located near the city of Karatau. The construction of the Karatau Chemical plant for the production of crushed phosphorite granules (Shekem stone) began in 1983 and was put into operation in 1989. 1990–1993. more than 1 million tons of phosphorite pellets are produced from the plant and sent to the Zhambyl Production Association "Himprom" (Saparov et al., 2018: 35).

Shakpak is the administrative center of the rural district. In the Zhualy region, there are many names related to the word "Shakpak". These are: "Shakpak Pass", "Shakpaktemirzhol station", "Shakpakata village", "Shakpak town", "shakpakata Aulie cave", "Shakpak line". Of course, these are all names that have diverged due to the discovery of nu silicon reserves in this region. There are a lot of flints in Shakpaktau that produce fire. In the past, ordinary people returned there to collect flint. They lit a fire with him and lived. The name of this stone is "Silicon". From the end of the XIX to the 20s of the XX century, peasants and kulaks who emigrated from Russia built a village at the foot of the village of Shakpak and called it "Kremenevka". In 1992, the village was renamed Shakpakata.

Keregetas is a hill to the east of the Zhylybulak stream, formed by rocky cliffs with stunning views. The reason for the name of these hills was the crimson soil. In Kazakh everyday life there are comparative phrases "kinshasa", "zhosadai", which means blood-red color. According to the old-timers, previously, the paint of zhosa was produced here, which painted various products, wood. For this reason, this place was named Zhosaly. This Tube mound was discovered by a detachment of the expedition of the Institute of History, Archeology and Ethnology of the Kazakh Academy of Sciences named after Sh. Ualikhanov under the leadership of A. Dosymbaeva.

The name of the city and locality of the suburb of *Shygyl - Taraz* (Zhikil-Zhambyl district, village of Zhalpaktobe). When Alexander the Great reached the country of the Talas region, it was raining heavily, the roads were rustling, the earth-world was becoming a swamp. "Ain jikl ast," said Naligan Zulkarnai. The Kazakh meaning of this is close to the concept of "what a swamp". Later, a mound will be built there. In the same mound, including in "shegil" (shygyl). The Oguzes called the Turkic tribes "shegil" (shygyl-zhikil), who inhabited the whole earth from Zhaykhun to the top (Saparov et al., 2018: 35).

It can be noted that the geological structure and names of minerals play an important role in determining the toponymic system of the territory. The ways of their formation and distribution areas can be seen on the map describing the geological structure and minerals of the Zhambyl region (Fig. 3).

Conclusion

In our research, minerals of the Zhambyl region and geographical names justifying the geological structure were grouped. It was found that this group of names accounts for 1.4 % of all toponyms (124 names) in the territory. The history of the geological development of the territory of the Zhambyl region has created prerequisites for the formation of specific relief structures, and terms can be found as part of toponyms on the territory. The use of mineral wealth has played an important role in the rapid development of civilization since the earliest period of human development. As a result of the development of ancient deposits, deposits of new minerals were formed on the same lands. These toponymic data can be used not only in the study of economy of ancient society but also in determining individual problems of geological work of the present. Therefore, toponyms play an important role in the study of the history of the mining and manufacturing industry in the territory (Yeginbayeva et al., 2017: 115).

Summing up the above, Kazakh geographical names not only reflect the features of the vast territory of Kazakhstan (relief, hydrography, wildlife, climate, vegetation, and soils), but also indicate with amazing accuracy that there are very small parts of them, and sometimes geological structures and minerals (Emilio et al., 2013: 106).

Important features of local toponyms are their provision of information about mineral deposits and their role in the search for deposits. Toponyms should not be allowed to change on geological and other maps. This is because they lead to the disappearance of toponyms of great importance in science. On the contrary, to compile topographic, geological, geomorphological, hydrogeological, and other maps of the territory of Kazakhstan, it is necessary to carry out a detailed and accurate definition of local geographical names.

In the representation of minerals in local toponyms, there is a historical and archaeological geological justification. Identifies geological reserves of deposits, and creates opportunities for the discovery of other deposits. Toponyms associated with meaning, and wealth, can complement geographical names with significant characteristics and give geologists the necessary information at the stages of the discovery of ore sources.

REFERENCES

- Abdullina A.G., Saparov K.T., Sergeyeva A.M., Yeginbayeva A.Ye., Atasoy E. (2019). The importance of toponymy of Mugalzhyr mountain plots and adjacent territories to the development of geotourism, *Geojournal of Tourism and Geosites*. — 19:664–674. — DOI: 10.30892/gtg.25224-388 (in Eng.).
- Abdullina A.G., Sergeyeva A.M., Saparov K.T., Yeginbayeva A.Ye., Embergenov N.J. (2021). Toponyms of cretaceous deposits in Western Kazakhstan territory (In the context of Aktobe region), *News of the National Academy of Sciences of the Republic of Kazakhstan, series of Geology and Technical Sciences*. — 21:22-30. — DOI: 10.32014/2021.2518-170X.30 (in Eng.).
- Basik S.N. (2006). *General Toponymy: Textbook for students of the Faculty of Geography*. —Minsk, Belarus. — 200 p. — ISBN: 148-1-457-74456-9.
- Conedera M., Vassere S., Neff C., Meurer M., Krebs P. (2007). Using Toponymy to Reconstruct past Land Use: A Case Study of 'Brÿsöda' (Burn) in Southern Switzerland, *Journal of Historical Geography*. — 7:729–748. — DOI: 10.1016/j.jhg.2006.11.002 (in Eng.).
- Emilio N., Rodríguez J.A., Lacasta P. (2013). A study of the toponyms of places and areas in relation to the physical characteristics of the terrain of the province of Cuenca, *Semestrale di Studi e Ricerche di Geografia Roma*. — 13:106–197. — DOI: 10.13133/1125-5218.15164 (in Eng.).

Ismatova N.M. (2021). Principles of toponyms classifications. Academic research in educational sciences. Almaty. — ISBN: 978-3-745-74587-4.

Khanmogomedov H.L. (2011). Geographical directions of applied toponymy, Bulletin of Urmud University [Geograficheskie napravlenia prikladnoi toponimiki, Vestnik Urmudskogo universiteta]. — 11:3-128 (in Russ.).

Khayitova F. (2020). Principles of Toponyms (Place Names) Classifications, International Journal of Multicultural and Multireligious Understanding. — 20:19-27. — DOI:10.18415/ijmmu.v7i6.1738 (in Eng.).

Konkashpaev G.K. (2012). Kazakh folk geographical terms, Bulletin of the Academy of Sciences of the KazSSR [Kazahskie narodnye geograficheskie terminy, Izvestia AN KazSSR]. — 51:3–47 (in Russ.).

Penko N.S. (2018). Engraved in the Landscape: The Study of Spatial and Temporal Characteristics of Field Names in the Changing Landscape, Names. — 18:77–93. — DOI:10.1080/00277738.2017.1415539 (in Eng.).

Peteet J. (2005). Words as interventions: Naming in the Palestine – Israel conflict, Third World Quarterly. — 05:153–172. — DOI: 10.1016/0269-7491(87) 90156-4 (in Eng.).

Rose-Redwood R., Alderman D., Azaryahu M. (2010). Geographies of toponymic inscription: new directions in critical place-name studies, Progress in Human Geography. — 34(4): 453–470 (in Eng.).

Saparov K., Chlachula J., Yeginbayeva A.Ye. (2018). Toponymy of the ancient Sary-Arka (North-Eastern Kazakhstan), Quaestiones geographicae. — 18:35–52. — DOI: 10.2478/quageo-2018-0024 (in Eng.).

Sergeyeva A.M., Abdullina A.G., Akhmet G.Zh., Saparov K.T., Yeginbayeva A.Ye. (2022). Protection of the geological heritage of the Aktobe oblast and its use for the development of the geotourism, Geojournal of Tourism and Geosites. — 22:111–119. — DOI: 10.30892/gtg.40113-809 (in Eng.).

Smagulova Ju., Madiyeva D. (2021). Normalizing a new language hierarchy: Event names in post-Soviet urban space, Russian Journal of Linguistics. — 21:1004–1023. — DOI: 10.22363/2687-0088-2021-25-4-1004-1023 (in Eng.).

Gessko E.A., Kopaneva I.A., Abdyrakhmanov S.A. (2013). State Catalogue of Geographical Names of the Republic of Kazakhstan. — Volume 7, — Zhambyl region. — Almaty. — 360 p. — ISBN: 978-3-540-70777-6.

Stewart G.R. (1985). American Place-Names: a concise and selective Dictionary for the Continental United States of America. Oxford University Press, — USA. — ISBN: 478-1-235-45268-5.

Yeginbayeva A.Ye., Saparov K.T., Nurgalieva G.Zh., Kulzhanova S.M., Atasoy E., Wendt Jan A. (2017). The question of Kazakh national and geographical toponymic as a potential factor of tourism development, GeoJournal of Tourism and Geosites. — 17: 115–125 (in Eng.).

Wendt J.A. (2017). Poland: from changes of German names up to bilingual geographical names. Achieving Peace and Justice Through Geographical Naming. Proceedings of the 23rd International Seminar on Sea Names, The Society for East Sea, Seoul. — http://www.eastsea1994.org/eng/board/thesis?viewMode=view&ca=2017&sel_search=&txt_search=&page=3&idx=141 (in Eng.).

CONTENT

G.Yu. Abdugaliyeva, G.K. Daumova, B.E. Makhiyev, A. Akylkankyzy PROGNOSIS OF INJURIES AT METALLURGICAL PLANTS OF KAZZINC LLP BY MATHEMATICAL MODELING.....	8
B. Assanova, B. Orazbayev, Zh. Moldasheva, V. Makhatova, R. Tuleuova A FUZZY DECISION-MAKING METHOD FOR CONTROLLING OPERATION MODES OF A HARD-TO-FORMALISE RECTIFICATION COLUMN OF A DELAYED COKING UNIT.....	17
K.A. Battakova, A.A. Saipov GEOGRAPHICAL ASPECTS OF THE IMPACT OF TECHNOGENESIS ON THE ACCUMULATION OF HEAVY METALS IN SOILS AND POLLUTION OF SURFACE WATERS OF CENTRAL KAZAKHSTAN.....	31
M. Begentayev, M. Nurpeisova, E. Kuldiev, R. Nurlybaev, U. Bek STUDY OF THE INFLUENCE OF TECHNOLOGICAL FACTORS ON THE DENSITY AND STRENGTH OF ASH-GAS CONCRETE.....	45
A.A. Bokanova, A.A. Abdurrahmanov, B.K. Kurpenov, A.I. Kamardin, T.D. Imanbekova DEVELOPMENT OF A CORONA DISCHARGE GAS ANALYZER FOR AIR DISINFECTION.....	58
G.Zh. Bulekbayeva, O.G. Kikvidze, A.U. Tabylov, A.Z. Bukayeva, N.B. Suyeuova APPLICATION OF THE COMBINED FINISHING AND HARDENING METHOD FOR COMPLEX QUALITY PARAMETERS OF THE PARTS SURFACE LAYER.....	68
A.A. Volnenko, A.E. Leudanski, A.S. Serikov, A.N. Issayeva, D.K. Zhumadullayev CALCULATION AND IMPLEMENTATION OF A CYCLONE-VORTEX DEVICE IN CHROMIC SULPHATE PRODUCTION.....	80
N. Zhalgasuly, A.A. Ismailova, U.A. Bektibayev, T.Zh. Zhumagulov PURIFICATION OF PRODUCED WATER AFTER MINING.....	95
L. Zhiyenkulova, M. Yessenamanova, M. Jexenov, E.G. Koroleva, F. Nurbayeva ECOLOGICAL AND LIMNOLOGICAL RESEARCH OF THE SUSTAINABILITY OF THE ECOSYSTEM OF THE LAKE INDER.....	111
L.Z. Issayeva, Z.N. Ablessenova, K.S. Togizov, S.K. Assubayeva, L.V. Petrova HYDROTHERMALLY ALTERED ROCKS OF THE AKMAYA-QATPAR ORE ZONE AND THEIR REFLECTION IN GEOPHYSICAL FIELDS.....	128
Zh. Kadasheva, B. Mukhambetov, R. Abdinov, Ye. Kabiyeu, R. Meranzova STUDYING DWARFISM IN <i>KOCHIA PROSTRATA</i> GROWTH ON SALINE LANDS OF THE NORTHERN CASPIAN DESERT.....	143
B.Z. Kaliyev, B.K. Mauletbekova, T.D. Karmanov, B.A. Zhautikov, Zh.K. Tatayeva TECHNIQUE AND TECHNOLOGICAL FEATURES OF SEPARATION OF SPENT DRILLING FLUIDS INTO LIQUID AND SOLID PHASES FOR THE PURPOSE OF REUSE OF SEPARATION PRODUCTS.....	155

I.B. Kozhabaeva, A.A.Yerzhan, P.V. Boikachev, Z.D. Manbetova, A.K. Issataeva DEVELOPMENT OF A DIRECTION FINDER WITH DIRECTION DETERMINATION FOR SMALL-SIZED UNMANNED AERIAL VEHICLES.....	164
G. Madimarova, T. Nurpeissova, D. Kairatov, D. Suleimenova, Sh. Zhantyeva INSPECTION AND CARRYING OUT GNSS MONITORING OF POINTS OF THE STATE GEODETIC NETWORK IN THE TERRITORY OF KAZAKHSTAN.....	179
A.P. Permana, A. Suaib, R. Hutagalung, S.S. Eraku ANALYSIS OF THE RELATIVE AGE OF LIMESTONE AT TANJUNG KRAMAT REGION, GORONTALO CITY, INDONESIA.....	190
O.S. Reshetnikova, K.B. Kyzyrov, V.V. Yurchenko STRUCTURAL SYNTHESIS OF HYDRAULIC IMPACT MECHANISMS WITH A COMBINED CONTROL BODY.....	201
D. Ryskalieva, S. Syrlybekkyzy, S. Sagyndykova, A. Mustafina, G. Saparova DEPENDENCE OF MOBILE SULFUR ACCUMULATION IN SOILS AND HYDROGEN SULFIDE EMISSIONS ON THE TERRITORY OF ATYRAU.....	218
K.T. Saparov, Zh.R. Shakhantayeva, A.Ye. Yeginbayeva, N.Y. Yessenkeldiyev, J.A. Wendt THE SYSTEM OF TOPONYMS CHARACTERIZING THE GEOLOGICAL STRUCTURE AND MINERALS OF THE ZHAMBYL REGION.....	238
A. Togasheva, R. Bayamirova, M. Sarbopeyeva, M. Bisengaliev, V.L. Khomenko MEASURES TO PREVENT AND COMBAT COMPLICATIONS IN THE OPERATION OF HIGH-VISCOSITY OILS OF WESTERN KAZAKHSTAN.....	257
J.B. Toshov, K.T. Sherov, M.R. Sikhimbayev, B.N. Absadykov, A. Esirkepov ANALYSIS OF INTERACTION OF ROCK BREAKING TOOL WITH ROCK IN THE DRILLING PROCESS.....	271

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 described work 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 Cross Check originality detection service <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 only 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](http://www.nauka-nanrk.kz)

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

ISSN 2518-170X (Online),

ISSN 2224-5278 (Print)

Подписано в печать 15.02.2024.

Формат 70x90^{1/16}. Бумага офсетная. Печать – ризограф.
18,0 п.л. Тираж 300. Заказ 1.