Contents

1. MSZ JSC's Overview and Core Activities

MSZ Machinery Manufacturing Plant, Joint-Stock Company (MSZ JSC) is the oldest nuclear industry undertaking in the Russian Federation. MSZ JSC's industrial site is situated in the eastern part of the City District of Elektrostal, Moscow Region, in the city's industrial area.

The plant was established in 1916 by Nikolay Vtorov (Russian merchant) as a munition filling (ordnance) factory to supply ammunition for the Russian army in the First World War years. The first product batch was manufactured on February 28, 1917. This date is celebrated as the official date of establishment of the plant.

Over the years of the Great Patriotic War (1941-1945) our plant was manufacturing mines, bombs, artillery shells and rockets, including ammunition for truck-mounted multi-barrelled rocket launchers known as "Katyusha" *(an affectionate diminutive of Ekaterina – a female name – translator's note* [*t/n*]). In 1943, the plant was decorated with the highest national award – the Order of Lenin - for its essential contribution to the cause of Victory over Nazi Germany as well as the labour feat of the plant's team. In late 40-s – early 50-s, the plant masters a series of nuclear technologies related to the creation of the country's "nuclear shield". These achievements were celebrated by awarding the second Order of Lenin to our plant.

1954 marked the beginning of fuel rod and fuel assembly manufacture for the nuclear power industry. The next stage was the organisation of core production for the nuclear marine fleet. 1965 saw the launch of series manufacture of fuel rods and fuel assemblies for nuclear power plants (NPPs).

TODAY, MSZ MACHINERY MANUFACTURING PLANT, JOINT-STOCK COMPANY (MSZ JSC) IS INCLUDED IN TVEL JSC (FUEL COMPANY OF SC ROSATOM) STRUCTURE AND OPERATES AS THE LARGEST COMPANY THAT MANUFACTURES NUCLEAR FUEL FOR POWER AND RESEARCH REACTORS.

Within the company's premises, there are 8 shops, 4 laboratories, company functions and services as well as a dependent subsidiary company (OOO MSZ-Mekhanika, a limited liability company).

Our company is one of the four largest fully integrated nuclear fuel manufacturers in the world, including:

1. Chemical and metallurgical operations;
2. Powder processing operations;
3. Component manufacture;
4. Fuel rod manufacture;
5. Fuel assembly (FA) manufacture;
6. Set of benches for physical tests and batching of the output product;
7. Storage facilities for the finished product.

The overall capacity of uranium production, including in-process scrap and rejected material, is about 1400 tU/year. MSZ JSC's product quality conforms to the current requirements set forth by nuclear product consumers.

MSZ JSC manufactures and supplies FAs for different reactor types, such as VVER-440, VVER-1000, RBMK-1000, BN-600, PWR, BWR, CEFR, CFR, for research reactors and naval vessel reactors as well as finished products – uranium dioxide, UO_2 and UO_2-Gd_2O_3 fuel pellets as well as fuel rods, component thereof and also fuel assemblies for nuclear fuel production at the plants within and outside Russia.

Besides nuclear fuel, MSZ JSC manufactures absorber rods as well as control assemblies for control and protection systems (CPS) for all types of Russian-design reactors.

On an ongoing basis, MSZ JSC takes part in development activities related to new and upgraded products for NPPs as well as reactors of various types, performs prove-out testing of their manufacturing processes, launches these products into manufacture, involving manufacture of pilot product batches and samples, masters their series manufacture and improves their manufacturing processes. Examples of such products include fuel assemblies for BN-800 reactor, fuel assemblies and control assemblies for VVER-1200 reactor, working fuel assemblies RK-3 for VVER-440 reactor, TVSA-T and TVSA-PLUS for VVER-1000 reactor, absorber rods and control assemblies as well as test product items for prospective BREST and BN-1200 reactors.

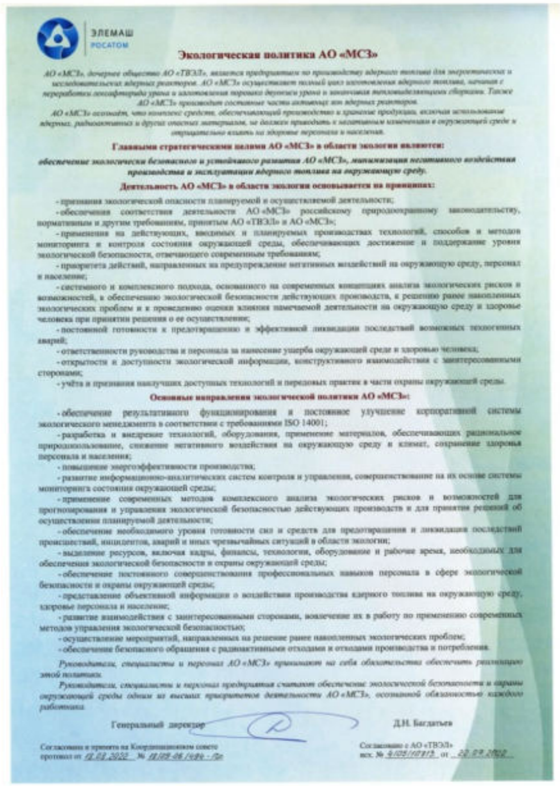
The company has created technologies for manufacturing products used by companies operating in the nuclear power industry, in chemical, oil/gas, medical and food industries. Innovative scientific and technological advances are the basis for the applied flow-processes.

Annually, the company invests substantial amounts of money to upgrade and expand its production; as of today, all the nuclear fuel fabrication processes have been automated and mechanised.

Over the past five years, MSZ JSC was presented with high awards in recognition of its employee team's contribution to the cause of environment preservation: the merit badge for the contribution to environmental culture and safety culture of Rosatom; award "For the Shown Initiative and Significant Contribution to the Cause of Environment Protection" by V.I. Vernadsky Nongovernmental Ecological Foundation; commendation from the Administration of the Municipal General Education Institution - General Secondary School No. 1 for providing assistance in teaching the younger generation the basics of environmental protection; commendation from the Department of Education of the Administration of the City District of Elektrostal, the Moscow Region, for holding a masterclass as part of the municipal festival among school educational co-working centres.

2. MSZ JSC's Environmental Policy

MSZ JSC has established its environmental policy. This policy has been updated, agreed upon and adopted at MSZ JSC's Coordination Board session (Minutes No. 18/09-06/494-Пр dated August 18, 2022). Its validity has been extended by the Coordination Board decision (Minutes No. 18/74-09/3-Пр dated August 4, 2023).



The Environmental Policy of MSZ JSC sets the company's priorities in environmental management as well as protection with the purpose to increase competitive advantage by ensuring environmentally safe and sustainable development of the company and mitigation of adverse environmental impacts of nuclear fuel manufacture and operation.

MSZ JSC's policy in a particular area of activity is established for 10-15 years, reviewed at least once every five years and, whenever an update is needed, is revised and republished by the applicable decision of the Coordination Board.

MSZ JSC'S PRINCIPAL STRATEGIC ENVIRONMENTAL OBJECTIVES ARE AS FOLLOWS:

1. ENSURING ENVIRONMENTALLY SAFE AND SUSTAINABLE DEVELOPMENT OF MSZ JSC;

2. MITIGATION OF ADVERSE ENVIRONMENTAL IMPACTS OF NUCLEAR FUEL MANUFACTURE AND OPERATION.

MSZ JSC's environmental activities are based on the following principles:

- *awareness of environmental hazard for planned and implemented activities;*
- *ensuring compliance of MSZ JSC's activities with the Russian environmental legislation, regulatory as well as other requirements adopted by TVEL JSC and MSZ JSC;*
- *with reference to currently operating, to-be-put-into-operation and prospective production works - application of technologies, procedures and methods of environmental monitoring and control that ensure achievement and maintenance of environmental safety at the level conforming to modern-day requirements;*
- *priority of the actions aimed at preventing adverse impacts on environment, personnel and population;*
- *systematic and comprehensive approach based on contemporary concepts of analysing environmental risks and opportunities to ensure environmental safety of currently operating production works, to address the earlier accumulated environmental issues and to evaluate impacts of the nominated activities on environment and human health in deciding whether to carry out these activities;*
- *constant preparedness for prevention and efficient remedial response to potential man-made accidents;*
- *accountability of the top management and personnel for damages to environment and human health;*
- *transparency and availability of environmental information, constructive interfaces with interested parties.*

Actions aimed at implementing the immediate objectives (targets) declared in the Environmental Policy of MSZ JSC are included in the Programme for Achieving Environmental Objectives and Targets of TVEL JSC. Based on half-year results, MSZ JSC submits to TVEL JSC the progress report on the implementation of actions related to MSZ JSC.

3. Management Systems: Environmental, Energy, Quality as well as Occupational Health and Safety (OHS)

MSZ JSC has established and implemented the Corporate Integrated Management System (CIMS) that is maintained and continually improved under the control of TVEL JSC, comprising the following:

- *the Corporate Quality Management System (CQMS) consistent with the requirements of ISO 9001:2015 international standard (certified in 2007);*
- *the Corporate Environmental Management System (CEMS) consistent with the requirements of ISO 14001:2015 international standard (certified in 2009);*
- *the Corporate Occupational Health and Safety Management System (COHS MS), consistent with the requirements of ISO 45001:2018 (certified in 2010);*
- *the Corporate Energy Management System (CEnMS) consistent with the requirements of ISO 50001:2018 international standard (certified in 2014).*

СЕРТИФИКАТ

соответствия системы менеджмента требованиям стандартов ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 и ISO 50001:2018

В соответствии с правилами сертификации подтверждено выполнение требований стандартов в организации

Акционерное общество "Машиностроительный завод"

144001, Российская Федерация, г. Электросталь Московской области, ул. Карла Маркса, дом 12

в области:

Производство и поставка тепловыделяющих сборок и материалов для них с обогащением урана не более 65% для энергетических реакторов, а также составных частей их активных зон и элементов систем регулирования и защиты.

Регистрационный номер сертификата: 15100526721 15104106991 15118202421 15275140751

Действителен до: 2024-08-27
Действителен с: 2021-08-28

Отчет по аудиту №: 3330/2EPC/O0

Сертификация проведена в соответствии с процедурами TIC по проведению аудита и сертификации и предусматривает проведение регулярных наблюдательных аудитов. Данный сертификат действителен только вместе с основным сертификатом.

Орган по сертификации систем и персонала TÜV Thüringen e.V.

Йена, 2023-12-21

At MSZ JSC, the CIMS has been in effect since 2011. Today the company has the certificate issued by TÜV Thüringen e.V. certification authority stating the CIMS's compliance at MSZ JSC with the requirements specified in ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, ISO 50001:2018 Nos. TIC 15 100 52672/1, TIC 15 104 10699/1, TIC 15 118 20242/1 and TIC 15 275 14075/1 valid through August 27, 2024.

Certificate validity is annually confirmed through surveillance audits by TÜV Thüringen e.V. The audits

conducted in 2022 by the representatives of OOO Intercertifica–TÜV (a limited liability company) jointly with TÜV Thüringen (Germany), by ZAO MVM Paks NPP (Hungary) of the Hungarian Atomic Energy Authority (HAEA), by Framatome GmbH (Germany) and by TVEL JSC have not found any nonconformities that could affect the favourable evaluation of the QMS and the CQMS at MSZ JSC.

MSZ JSC's management takes responsibility for communicating understanding of the importance to meet customer requirements as well as statutory and mandatory requirements, priority of ensuring nuclear and radiation safety as well as providing the company with the resources necessary to meet customer requirements and implement continual improvement of activities to the company functions and personnel.

At MSZ JSC, the CIMS covers manufacture as well as deliveries of fuel assemblies (FAs) and materials thereof (with uranium enrichment not exceeding 65%) for power reactors as well as their core components along with their control and protection system (CPS) components.

MSZ JSC has also established and implemented its Quality Management System (QMS) that is maintained and continually improved, consistent with the requirements of ISO 9001 international standard.

At MSZ JSC, the QMS has been in effect since 1996. Today the company has the certificate issued by TÜV Thüringen e.V. certification authority stating the QMS's compliance at MSZ JSC with the requirements specified in ISO 9001:2015 standard: No. TIC 15 100 52672/1 valid through August 27, 2024, valid through November 20, 2023. The QMS covers design, manufacture and deliveries of fuel assemblies (FAs), materials and semi-finished products thereof with uranium enrichment not exceeding 65%) for power reactors as well as for deliveries of core components along with control and protection system (CPS) components for power reactors.

MSZ JSC has established its quality policy including its principal strategic objectives and the ways for their implementation.

MSZ JSC's principal strategic quality objectives are as follows:

- continual improvement of product quality and operational safety;
- meeting customer needs and expectations;
- securing sustainable profits needed for continual improvement of MSZ JSC's activities as well as satisfaction of the interested parties.

Pursuant to ISO 9001 requirements, MSZ JSC has established the procedure for evaluating satisfaction of product users/customers. Their satisfaction is measured based on the results of product operation and customer questionnaire survey. The evaluation results are taken into account in the annual management review of the QMS.

ЭЛЕМАШ
РОСАТОМ

Политика АО «МСЗ» в области качества

АО «МСЗ», дочернее общество АО «ТВЭЛ», является крупнейшим в России предприятием по производству ядерного топлива для энергетических и исследовательских ядерных реакторов. АО «МСЗ» осуществляет полный цикл изготовления ядерного топлива, начиная от переработки гексафторида урана и изготовления порошка диоксида урана и заканчивая тепловыделяющими сборками. Также АО «МСЗ» производит составные части активных зон ядерных реакторов.

АО «МСЗ» осознаёт, что качество поставляемой продукции влияет на безопасность и эффективность функционирования объектов использования этой продукции.

Главными стратегическими целями АО «МСЗ» в области качества являются:

постоянное повышение уровня качества и эксплуатационной безопасности продукции, удовлетворение потребностей и ожиданий потребителей, получение устойчивой прибыли, необходимой для непрерывного совершенствования деятельности АО «МСЗ» и удовлетворения заинтересованных сторон.

Деятельность АО «МСЗ» в области качества основывается на принципах:

- обеспечения соответствия продукции и процессов её изготовления требованиям российского законодательства, нормативной, технической и другой документации, с учётом требований потребителей;
- выполнения требований потребителей и стремления оправдать и превзойти их ожидания в отношении безопасности и качества продукции;
- применения на действующих, вводимых и перспективных производствах технологий, методик и средств измерения, методов контроля, обеспечивающих достижение и поддержание качества конкурентоспособной продукции;
- постоянного совершенствования производства на основе мониторинга и анализа качества;
- принятия решений и выполнения действий на основе фактических данных с учётом рисков и возможностей;
- приоритета действий, направленных на обеспечение ядерной, радиационной и промышленной безопасности производства;
- необходимой и достаточной открытости и доступности информации по качеству, конструктивном взаимодействии с потребителями продукции и другими заинтересованными сторонами на основе сбалансированности интересов.

Основные направления политики АО «МСЗ» в области качества:

- обеспечение соответствия системы менеджмента качества требованиям ISO 9001, GSR Part 2 и постоянное её улучшение, а также обеспечение результативного функционирования и постоянного улучшения интегрированной системы менеджмента под управлением АО «ТВЭЛ»;
- освоение производства новых видов продукции и улучшение показателей качества выпускаемой продукции путём разработки и внедрения конструкций изделий, технологий, оборудования, методик и средств измерения, материалов и комплектующих изделий для производства продукции, обеспечивающих выполнение потребностей и ожиданий потребителей;
- сокращение издержек производства, в том числе путём оптимизации технологии изготовления продукции и повышения эффективности контроля качества продукции;
- постоянное совершенствование деятельности АО «МСЗ», направленное на непрерывное улучшение качества продукции, оказываемых услуг, осуществляемых видов деятельности при безусловном приоритете обеспечения безопасности производства;
- совершенствование информационно-аналитических систем сбора, учёта, мониторинга, анализа, обмена, представления и хранения данных по качеству при изготовлении и эксплуатации продукции;
- совершенствование нормативной документации путём разработки или корректировки стандартов предприятия для внедрения современных методов и инструментов системы менеджмента качества;
- выделение ресурсов, включая кадры, финансы, технологии, оборудование, и поддержание благоприятной среды и условий труда, необходимых для обеспечения качества выпускаемой продукции;
- обеспечение необходимого уровня квалификации персонала и создание условий для его постоянного повышения, в том числе в области качества, сохранение накопленного опыта и знаний;
- обеспечение ядерной, радиационной и промышленной безопасности производства.

Руководители, специалисты и персонал АО «МСЗ» принимают на себя обязательства обеспечить реализацию этой политики.

Генеральный директор Д.Н. Багдатьев

Согласована и принята на Координационном совете протокол от 23.09.2021 № 18174-09/К-/Пр

Согласовано с АО «ТВЭЛ» исх. № 9/03.9/13400 от 23.09.2021

4. Basic Documents Governing MSZ JSC's Environmental Conservation Activities

MSZ JSC has issued the valid Register of Environmental Protection Regulations and Regulatory Documents No. 18/76-09/82 dated March 20, 2023, comprising 384 documents, which requirements apply to MSZ JSC's activities.

MSZ JSC HAS AT ITS DISPOSAL AND ACTS IN ACCORDANCE WITH THE ENTIRE PACKAGE OF REGULATORY AND AUTHORISING DOCUMENTS.

The fundamental regulatory and authorising documents governing MSZ JSC's environmental conservation activities are as follows:

- *The Constitution of the Russian Federation dated December 12, 1993;*
- *The Land Code of the Russian Federation No. 136-FZ dated October 2, 2001;*
- *The Water Code of the Russian Federation No. 74-FZ dated June 3, 2006;*
- *The Town Planning Code of the Russian Federation No. 190-FZ dated December 29, 2004;*
- *Federal Law No. 7-FZ dated January 10, 2002, On Environmental Protection;*
- *Federal Law No. 96-FZ dated May 4, 1999, On Atmospheric Air Protection;*
- *Federal Law No. 52-FZ dated March 30, 1999, On Sanitary and Epidemiological Well-Being of the Population;*
- *Federal Law No. 89-FZ dated June 24, 1998, On Production and Consumer Waste;*
- *Federal Law No. 2385-1-FZ dated February 21, 1992, On Subsoil;*
- *Federal Law No. 3 dated January 09,1996, On Radiation Safety of the Population;*
- *Federal Law No. 190-FZ dated July 11, 2011, On the Management of Radioactive Waste and Amendment for Certain Legislative Acts of the Russian Federation;*
- *Federal Law No. 170-FZ dated November 21, 1995, On the Use of Atomic Energy;*
- *Federal Law No. 174-FZ dated November 23, 1995, On Ecological Expertise;*
- *SP 2.6.1.2523-09 Radiation Safety Standards (NRB-99/2009);*
- *SP 2.6.1.2612-10 Basic Sanitary Rules of Radiation Safety (OSPORB-99/2010);*
- *Resolution of the Chief State Sanitary Physician of the Russian Federation No.3 dated January 28, 2021 (as amended on February 14, 2022), On Approval of Sanitary Regulations and Standards SanPiN 2.1.3684-21 the Sanitary and Epidemiological Requirements for the Maintenance of the Territories of Urban and Rural Settlements, for Water Bodies, Drinking Water and Drinking Water Supply, Atmospheric Air, Soils, Residential Premises, Operation of Industrial and Public Premises, Organisation and Conduct of Sanitary and Anti-Epidemic (Preventive) Measures (together with SanPin 2.1.3684-21. Sanitary Regulations and Standards…);*
- *Sanitary Protection Zone Modification Project for the Operating Group of Companies – MSZ JSC and VNIINM JSC, Accounting for Economic Activities of Lessees and Sub-Lessees, No. 76/104-1 dated December 1, 2023;*
- *Certificate of Updating the Information on a Facility Causing Adverse Environmental Impact No. 5036588 dated July 7, 2021, with the verification of facility code 46-0177-007138-П and category II of adverse environmental impact;*
- *Allowable Pollutant Discharge Rates into a Water Body for MSZ Machinery Manufacturing Plant, Public Joint-Stock Company. Valid through April 14, 2028;*
- *Resolution of the Government of the Russian Federation No. 353 dated March 12, 2022, On the Specifics of Licensing Activities in the Russian Federation;*
- *Quantitative Estimates of Maximum Allowable Pollutant Atmospheric Emission Limits for MSZ Machinery Manufacturing Plant, Public Joint-Stock Company No. 76/100-1 dated April 15, 2021. Valid through April 15, 2028;*
- *List of Actions to Reduce Pollutant Releases into Atmospheric Air in Periods of Adverse Weather Conditions, released on April 19, 2021;*
- *Declaration of MSZ JSC's Environmental Impact No. 4946904 dated August 24, 2022. Valid through August 24, 2029;*

- *Authorisation for Radioactive Substance Release into Atmospheric Air No. ГН-ВР-0019 dated June 28, 2021. Valid through July 1, 2028 (remained valid until May 1, 2023);*
- *Authorisation for Radioactive Substance Release into Atmospheric Air No. ГН-ВР-0048 dated April 20, 2023. Valid through May 1, 2030;*
- *Licence for Radioactive Waste Management When It Is Processed, Stored and Transported No. ГН-07-115-4235. Valid through May 31, 2032;*
- *Declaration of Safety of MSZ PJSC's Tailings Storage Facility No. 16-17(01)0073-02-KOM;*
- *Hydraulic Structure Operating Authorisation No. 0060-02-KOM dated March 14, 2017.*

5. Industrial Environmental Control (IEC) and Environmental Monitoring

In accordance with the requirements defined in article 67 of Federal Law No. 7-FZ dated January 10, 2002, On Environmental Protection, article 11 of Federal Law No. 3-FZ dated January 9, 1996, On Radiation Safety of the Population, article 32 Federal Law No. 52-FZ dated March 30, 1999, On Sanitary and Epidemiological Well-Being of the Population, MSZ JSC carries out radioecological monitoring of pollutant contents in environmental compartments (air, surface and underground waters, soil, vegetation, atmospheric precipitations, etc.). MSZ JSC has established its Industrial Environmental Control (IEC) Programme No. 18/76-11/163 dated May 20, 2021, which specifies compliance with the requirements of the legislation related to environment conservation.

In accordance with the requirements defined in Sanitary Rules SP 1.1.1058-01 - Organising and Conducting In-Process Inspection of Compliance with Sanitary Rules and Implementation of Sanitary and Epidemiological (Preventive) Actions, the company has established its In-Process Inspection Programme for Sanitary Rules as well as Sanitary and Anti-Epidemic Measures Compliance Verification.

MONITORING IS CARRIED THROUGHOUT THE TERRITORY OF THE COMPANY'S INDUSTRIAL SITE AS WELL AS ITS SANITARY PROTECTION ZONE, RESIDENTIAL AREA AND 10-KM COMPANY'S LOCATION AREA.

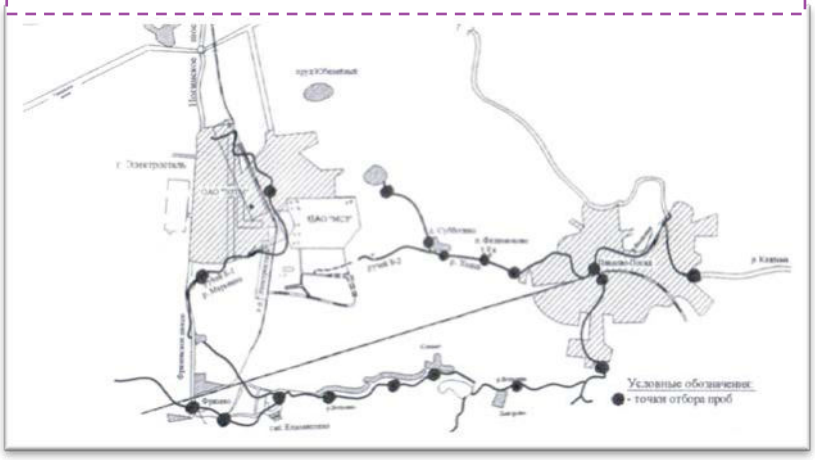
Monitoring is conducted by two laboratories that have at their disposal the measuring instruments (portable and laboratory-scale) verified in accordance with the established procedure, following the test methods specified in the appendices to the test laboratory accreditation certificates Nos. РОСС RU.0001.511620 and RA.RU.22ЭЛ36 issued by the Federal Accreditation Service of the Russian Federation (Rusaccreditation).

The laboratories use the most advanced devices and measuring instruments: spectrophotometers, spectrometers, spectrofluorimetric analysers, photoelectrocalorimeters, ion meters, oxygen meters, dosimeters, α-β-radiometers, radon (Rn) radiometers as well as other laboratory-scale equipment.

For the purpose of improving the environmental monitoring quality as well as sanitary and hygienic work environment, MSZ JSC restocks its measurement equipment on a regular basis.

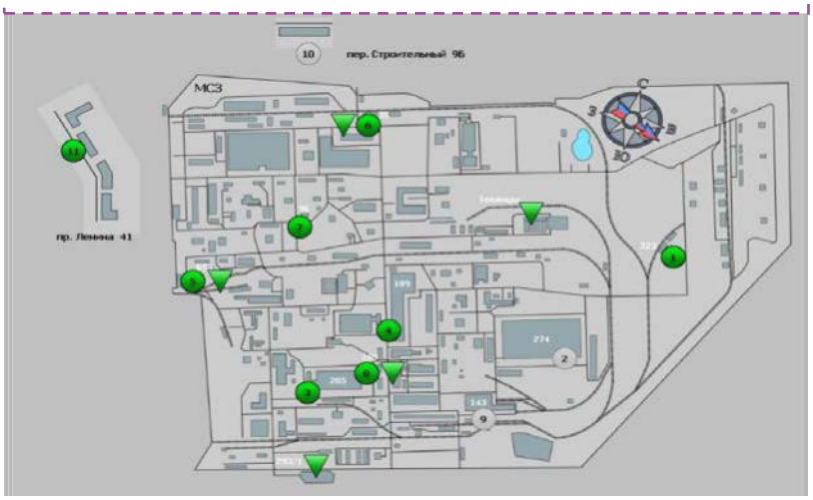
The laboratory staff who perform sampling and monitor pollutant discharges and releases continually advance their qualifications in the specialised general-education institutions accredited to carry out training/education activities.

Location map of monitoring points outside MSZ JSC's premises



In 2020, within the programme for developing Information Analysis Systems of Radioecological Monitoring applied in SC Rosatom's companies MSZ JSC has put its Information Analysis System of Radioecological Monitoring in operation. This system gathers data into the primary database, processes this data and integrates it with the Control Centre of the Information Analysis

Location map of Sensors of the Radiation &Chemical Situation Information and Measurement System within and outside MSZ JSC's industrial site



System of Radioecological Monitoring. In 2021, the Information Analysis System of Radioecological Monitoring started to be used as intended.

MSZ JSC has a functioning Radiation & Chemical Situation Information and Measurement System in place. This system performs continuous 24/7 automated measurements and at established 1-minute intervals indicates concentration levels of the hazardous chemicals, including carbon oxide, that in case of a wildfire could be generated in the air within the industrial site of the company as well as on the adjoining territories of the City District of Elektrostal. Also, there are continuous 24/7 real-time measurements of γ-radiation dose rate. Measurement ranges of controlled substance concentrations – within the limits from 0.5 MAC (maximum allowable concentration) for the population up to 5.0 MAC for the working area.

The Radiation & Chemical Situation Information and Measurement System comprises the following:

- *nine (9) radiation & chemical situation monitoring sites within MSZ JSC's industrial site;*
- *two (2) radiation & chemical situation monitoring sites on the territory of the City District of Elektrostal adjoining to MSZ JSC (pr. Lenina, pr. Stroitelniy);*
- *γ-radiation dose rate monitoring sensors БДМГ-100 (5 pcs.);*
- *meteorological system МК-15;*
- *the central computerised control station is situated in the Department of Mobilisation Work, Civil Defence and Emergencies as well as in the Nuclear and Radiation Safety Service.*

The Radiation & Chemical Situation Information and Measurement System allows the following parameters to be measured:

- *hydrofluoric vapour concentration in atmospheric air;*
- *hydrochloric vapour concentration in atmospheric air;*
- *nitrogen dioxide vapour concentration in atmospheric air;*
- *sulphurous acid anhydride vapour concentration in atmospheric air;*
- *ammonia vapour concentration in atmospheric air;*
- *carbon oxide concentration in atmospheric air;*
- *the volumetric activity of α-emitting radionuclides in atmospheric air;*
- *γ-radiation equivalent dose rate;*
- *temperature, wind direction & velocity, humidity and atmospheric pressure measurements.*

The established system makes it possible to control the parameters of chemical, radiation and meteorological situation within MSZ JSC premises using state-of-the-art hardware and software as well as to function as an alert system if the specified limits have been exceeded.

Based on the requirements of:

- *Federal Law No. 2385-1-FZ dated February 21, 1992, On Subsoil;*
- *Regulation on the Procedure for Conducting the State Monitoring of the Russian Federation Subsoil Condition (order of the Ministry of Natural Resources and Environment of the Russian Federation No. 433 dated May 21, 2001);*
- *Order of the State Atomic Energy Corporation Rosatom (SC Rosatom) No. 1/118-П dated July 21, 2010;*
- *On-Site Subsoil Condition Monitoring (OSCM) Concept for Companies and Organisation of SC Rosatom;*
- *Regulation on the Procedure for Conducting On-Site Subsoil Condition Monitoring (OSCM) in Companies and Organisations of SC Rosatom*

the company has established its MSZ PJSC's On-Site Subsoil Condition Monitoring Programme No. 18/56-26дсп/2620 dated March 19, 2019, that specifies the requirements for the on-site subsoil condition monitoring. This Programme has been agreed upon with the Federal State Budgetary Institution Hydrospetzgeologiya as well as Interregional Directorate No. 21 of the Federal Medical-Biological Agency (FMBA) of Russia and released by MSZ JSC's Director General.

No measurements conducted in 2023 as per the schedule of the On-Site Subsoil Condition Monitoring Programme demonstrated changes towards worsening of subsoil conditions.

2023 environmental control and monitoring yielded the following results:

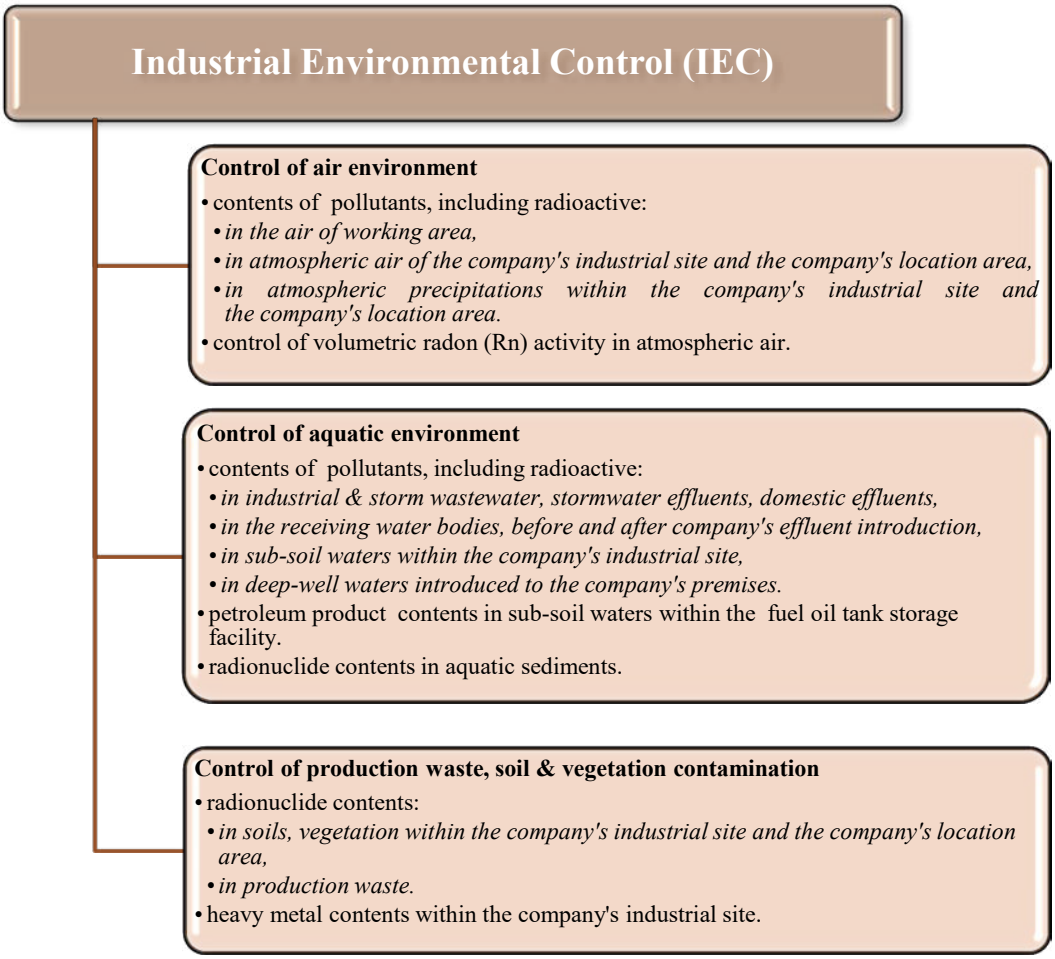
- *annual average radionuclide volumetric α-activity in atmospheric air within MSZ JSC's industrial site and sanitary protection zone as well as the region of professional interests of the City District of Elektrostal stood at 0.01 Bq/m^3, which does not exceed the specified level of 0.03 Bq/m^3;*
- *annual average total specific α-activity of radionuclides in water of open water bodies within the sanitary protection zone stood at 0.36 Bq/kg, in river water within MSZ JSC's location area stood at 0.352 Bq/kg, which does not exceed the specified level of 2.6 Bq/kg;*
- *annual average total specific α-activity of radionuclides in atmospheric precipitation (snow) within MSZ JSC's location area stood at 0.14 Bq/kg and within the company's premises this parameter stood at 0.192 Bq/kg, which does not exceed the specified level of 2.6 Bq/kg;*
- *average radionuclide contamination of aquatic sediments within MSZ JSC's premises stood at 411 Bq/kg, and of receiving water bodies within MSZ JSC's location area this parameter stood at 264 Bq/kg, which does not exceed the specified level of 1000 Bq/kg;*
- *radionuclide contamination value for vegetation within MSZ JSC's premises and location area stood below the lower limit of the range of the applied test method (<180 Bq/kg), which does not exceed the specified level of 1000 Bq/kg;*
- *average radionuclide contamination value for topsoil within MSZ JSC's premises stood at 329 Bq/kg and within MSZ JSC's location area this parameter stood below the lower limit of the range of the applied test method (<200 Bq/kg), which does not exceed the specified level of 1000 Bq/kg;*
- *average γ-radiation equivalent dose rate within MSZ JSC's industrial site stood at 0.15 μSv/h, whereas within MSZ JSC's location area this parameter stood at 0.14 μSv/h; annual average external radiation equivalent dose rate at the sanitary protection zone boundary stood at 0.16 μSv/h.*

Based on the requirements specified in SP 2.6.1.2612-10 Basic Sanitary Rules of Radiation Safety (OSPORB-99/2010) and in compliance with MY 2.6.1.2005 05 procedural guidelines Radiation Facility Potential Hazard Categorisation, MSZ JSC is ranked as a facility of category III potential radiation hazard (radiation impact does not extend outside the industrial site of the company, even in the event of maximum design-basis accident) simulated according to the most negative scenario, thus no observation area is required to be established.

The sanitary protection zone for the operating group of companies - MSZ JSC and VNIINM JSC, taking into account the economic activities of lessees and sub-lessees, has been established by Decision No. 325-03 dated October 2, 2023, awarded by the Moscow Region Directorate of the Russian Federal Service for Surveillance on Consumer Rights Protection and

Human Well-Being. The sanitary protection zone boundaries have been entered in the Unified State Register of Immovable Property.

Environmental monitoring is performed in the three basic undernoted directions:



In accordance with item 3 of article 11 of Federal Law No. 219-FZ dated July 21, 2014, On Amendment for Federal Law "On Environmental Protection" and Certain Legislative Acts of the Russian Federation as well as the procedure specified in article 69.2 of Federal Law No. 7-FZ dated January 10, 2002, On Environmental Protection, MSZ JSC has been state-registered as a facility causing adverse environmental impact. Based on the criteria for categorising the facilities causing environmental impacts, approved by Resolution of the Government of the Russian Federations No. 2398 dated December 31, 2020, On Approving the Criteria for Categorising the Facilities Causing Adverse Environmental Impact as Category I, II, III and IV Facilities, MSZ JSC was ranked as category II of adverse environmental impact (facilities with moderate environmental impact) and provided with the issued Certificate of State

Registration for a Facility Causing Adverse Environmental Impact No. BIYHA0N8 dated August 24, 2017. In 2021, the information on the facility causing adverse environmental impact was updated, with the result that the following certificated was issued to MSZ JSC: Certificate of Updating the Information on a Facility Causing Adverse Environmental Impact No. 5036588 dated July 7, 2021; it verifies that the category of the company's adverse environmental impact remains unchanged.

6. Environmental Impacts

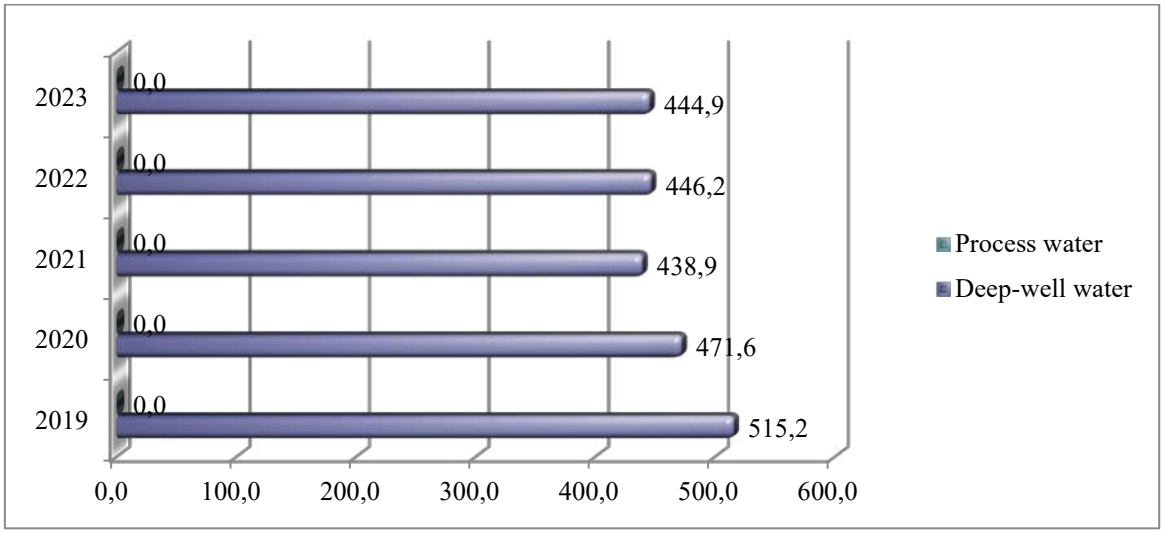
6.1. Source Water Intake

Water supply to satisfy the company's household and drinking, production as well as process needs of the core production (steam and distilled water production) is provided by withdrawing water from the deepwater wells via the two water intakes with second elevation pumping stations. Since 2017, MSZ JSC's water supply networks have also been connected to the networks of OOO Vodoservis (a limited liability company).

Licence to use subsoil resources МСК 06379 ВЭ (amendments and supplements No. 1 thereto) specifies the water consumption limit for OOO Energo Transfer (a limited liability company) and other consumers (including MSZ JSC) – 5.346 m^3/day (1951.300 thousand m^3/year).

Diagram 1 shows water resource consumption (over time) at MSZ JSC, not taking into account MSZ JSC's dependent subsidiary companies and the external organisations located within the company's industrial site.

DIAGRAM 1. ACTUAL WATER CONSUMPTION AT MSZ JSC, NOT INCLUDING DEPENDENT SUBSIDIARY COMPANIES AND EXTERNAL ORGANISATIONS LOCATED WITHIN THE COMPANY'S INDUSTRIAL SITE (THOUSAND M^3)



Implementation of the Automated Information and Measurement System for Utility Accounting allowed MSZ JSC to opt out of the computational method for determining the actual water consumption, which, in its turn, made it possible to obtain a more reliable data on the water use for production and domestic needs.

MSZ JSC constantly gives high priority to the operations related to reducing water consumption: the equipment is upgraded and provided with quality and timely repairs in compliance with the routine and preventive maintenance schedules.

Recirculated water supply systems are used at MSZ JSC's functions for equipment cooling. Total amount of water circulating in all of these systems is 7827.57 thousand m^3, which allows MSZ JSC to save up to 40% of the utilised water resources.

6.2. Discharges into the Open Hydrographic Network

MSZ JSC's industrial site is situated in the eastern part of the City District of Elektrostal, Moscow Region, in the industrial development area of the city. The wastewater receiver is the Khodtsa river, which flows into the Vokhonka river – the right feeder of the Klyazma river.

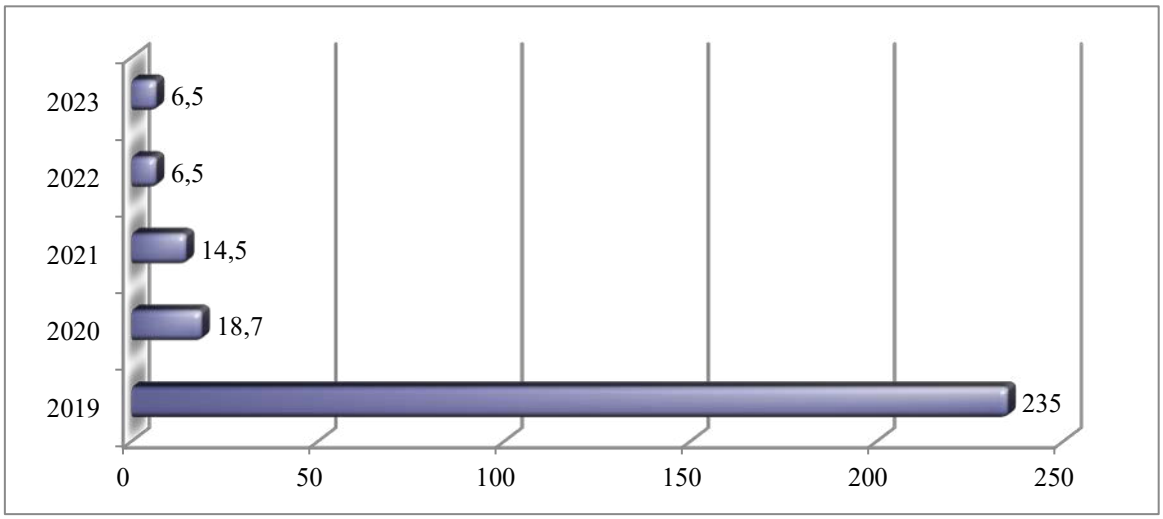
Domestic wastewater is introduced in the city's sewage conduit and carried to the treatment facilities situated in the city of Pavlosky Posad. After biological treatment, wastewater is introduced into the open hydrographic network – the Klyazma river.

A collection, treatment and conditioning system for industrial & storm wastewater to be used in MSZ JSC's process water supply was commissioned at the end of 2019 at six (6) stormwater sewer outlets, which made it possible to opt out of purchasing river water from Elektrostal Metallurgical Plant, Joint-Stock Company and eliminate pollutant discharge (coming together with MSZ JSC's effluents) into the open hydrographic network.

The actual volume of industrial effluents discharged in 2023 amounted to 6.5 thousand m^3.

The actual volume of industrial effluents (over the years) discharged in the stormwater sewers for MSZ JSC is shown in Diagram 2.

DIAGRAM 2. TOTAL VOLUME OF INDUSTRIAL EFFLUENTS DISCHARGED IN STORMWATER SEWERS (THOUSAND M^3)



6.2.1. Pollutant Discharges

In 2023, actual harmful chemical substance discharge in the stormwater sewers amounted to 484.015 tonnes. In 2022, it stood at 368.225 tonnes.

The stormwater sewer outlets from MSZ JSC's industrial site are generated containing 4% of production effluents (conditionally pure production waters) and 96% of surface run-offs (rain, thaw and road wash-waters.

Hazard class 1, 2 pollutants (extremely hazardous and highly hazardous harmful chemical substances) are not among the pollutants discharged into the open hydrographic network as part of MSZ JSC's wastewater.

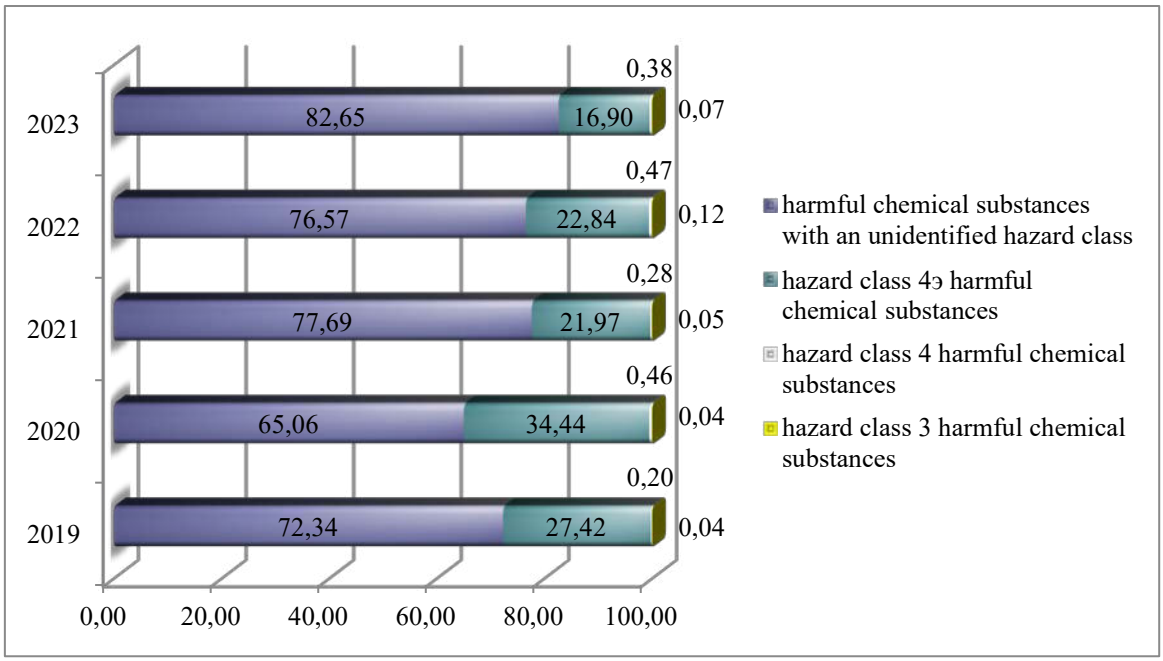
Contribution of substances belonging to:

- *hazard class 3 (hazardous) – less than 1% (fluoride anion, petroleum products, copper, zinc);*
- *hazard class 4 (moderately hazardous) – less than 1% (ammonium ion, total iron);*
- *hazard class 4э (environmental) – up to 16% (chloride anion, phosphates, nitrate anion, nitrite anion).*

Substances of unidentified hazard class account for up to 83% (dry residue, COD, BOD_{total}, suspended substances and sulphate ion).

Diagram 3 below presents the data on gross discharge of harmful chemical substances in the stormwater sewers (overall, for all outlets) broken down by hazard classes.

DIAGRAM 3. GROSS DISCHARGE IN THE STORMWATER SEWERS, BROKEN DOWN BY HAZARD CLASSES (%)



Discharge composition by main pollutants for 2023 is given in Table 1.

TABLE 1. DATA ON DISCHARGES OF HARMFUL CHEMICAL SUBSTANCES INTO THE STORMWATER SEWERS

It. No.	Pollutant	Hazard class	Actual discharge in 2023, tonnes
1	ammonium ion	4	1.862
2	BOD total	-	0.906
3	suspended substances	-	2.744
4	iron	4	0.024
5	copper	3	0.0005
6	petroleum products (petroleum)	3	0.023
7	nitrate anion	4э	52.233
8	nitrite anion	4э	0.188
9	sulphate anion (sulphates)	-	38.106
10	dry residue	-	355.811
11	phosphates (by phosphorus)	4э	0.035
12	fluoride anion	3	0.338
13	chloride anion (chlorides)	4э	31.742
14	COD	-	14.290
15	zinc	3	0.0023

MSZ JSC's wastewater is covered by the standard rates applied to fishery water reservoirs. These standard rates specify the most stringent requirements

for the qualitative composition of effluents. Maximum allowable concentrations (MAC) in MSZ JSC's effluents by copper (MAC=0.001 mg/dm^3) and zinc (MAC=0.01 mg/dm^3) are more stringent than in distilled water and by total iron (MAC=0.1 mg/dm^3), ammonium ion (MAC=0.5 mg/dm^3) as well as petroleum products (MAC=0.05 mg/dm^3) MSZ JSC's MAC indicators are more stringent than in drinking water. This means that the deep-well water withdrawn by MSZ JSC prior to its discharge must be after-treated till it conforms to the standard rates applied to fishery waters.

In 2023, actual discharge of harmful chemical substances into the domestic sewers and amounted to 294.75 tonnes.

394.68 thousand m^3 of water of water were supplied to the domestic water disposal systems.

Evolution of pollutants' gross discharge into the domestic sewers is given in Diagram 4.

DIAGRAM 4. EVOLUTION OF GROSS DISCHARGE OF HARMFUL CHEMICAL SUBSTANCES INTO THE DOMESTIC SEWERS (TONNES)

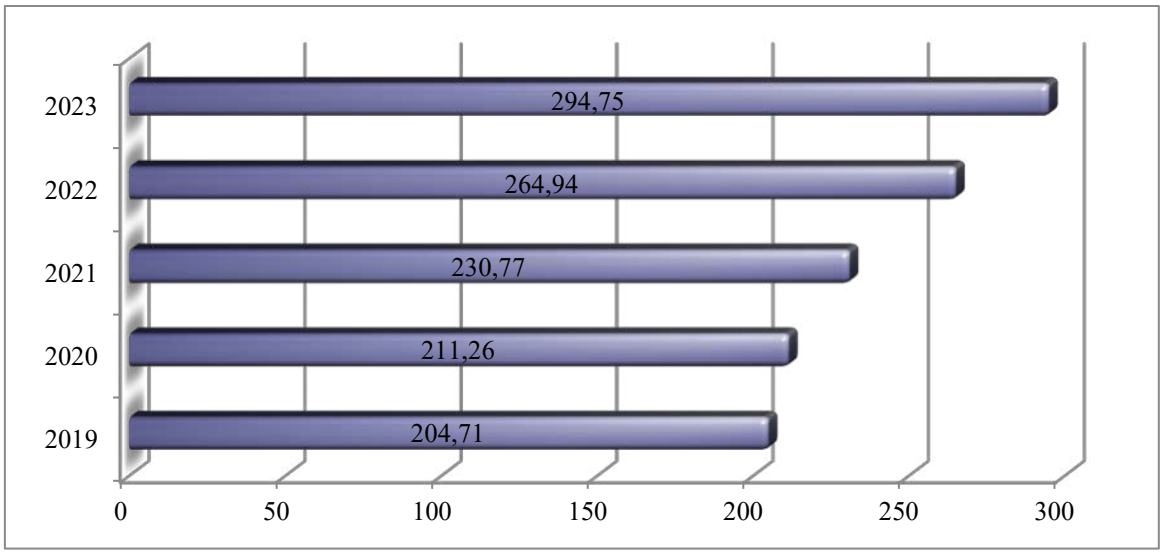
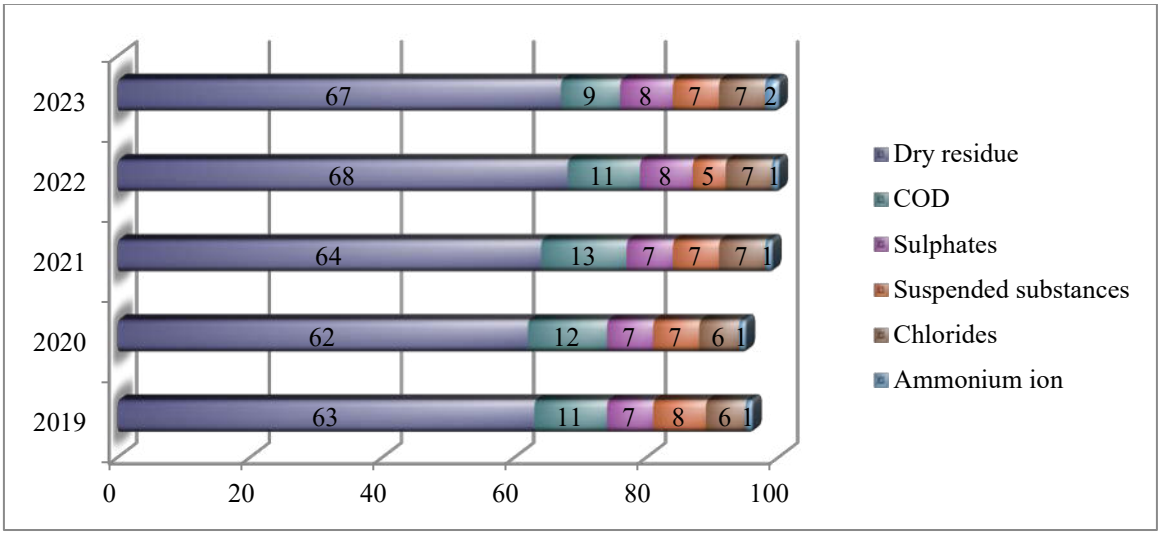


Diagram 5 shows the structure of main pollutants' gross discharge into the domestic sewers.

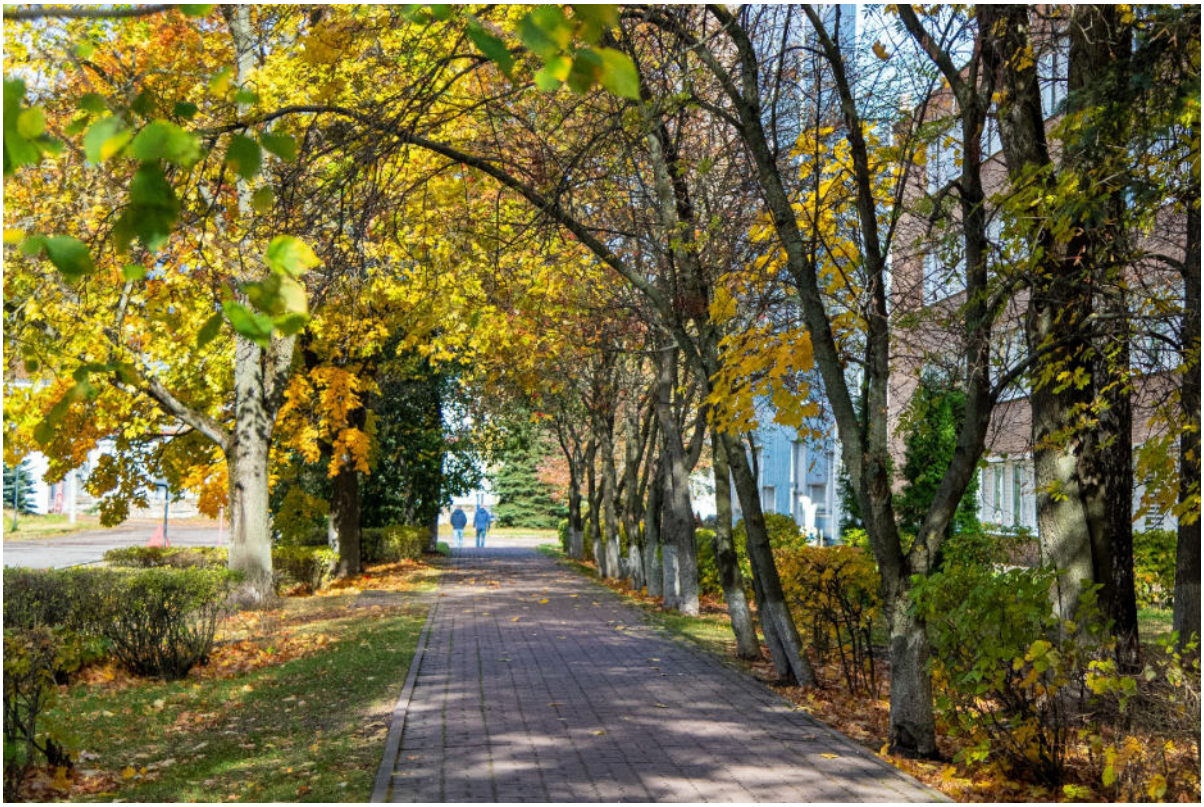
DIAGRAM 5. GROSS DISCHARGE INTO THE DOMESTIC SEWERS, BY MAIN HARMFUL CHEMICAL SUBSTANCES (%)



In 2023, the largest contribution into the domestic sewer discharges was made by dry residue – up to 67%; the contribution of COD accounted for up to 9%; suspended substances – up to 7%; sulphates – up to 8%, chlorides – up to 7%, ammonium ion – about 2%; the contribution of petroleum products, anionic surfactants, phosphates, chromium, copper, nickel, manganese, zinc, total iron, nitrate anion and nitrite anion, in total, accounted for about 1%.

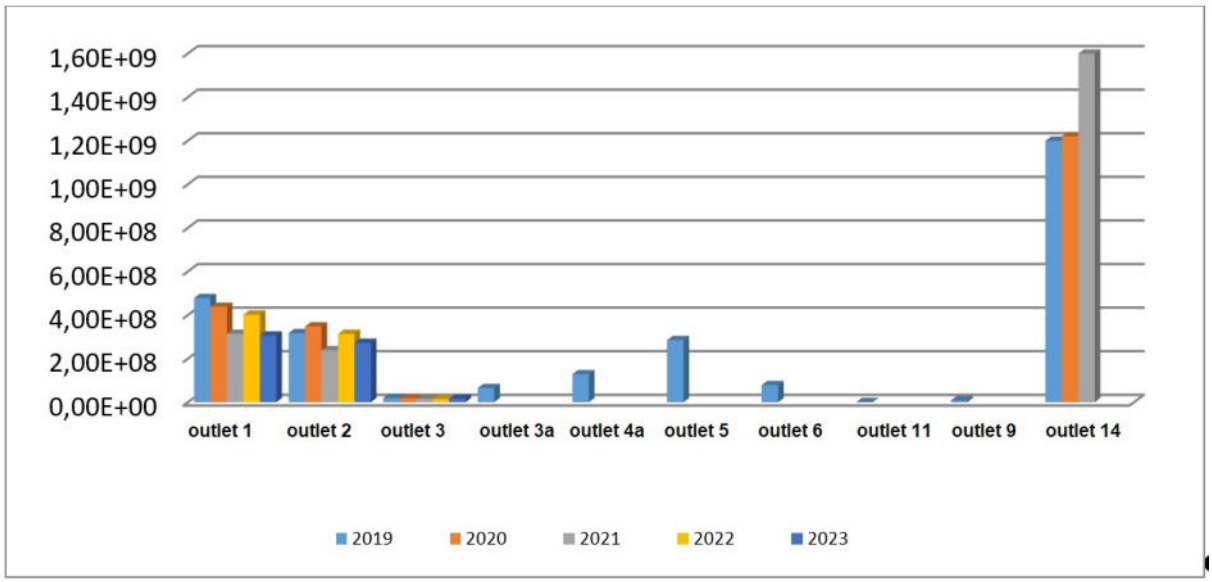
6.2.2. Radionuclide Discharges

In accordance with article 51 of Federal Law No. 7-FZ dated January 10, 2002, On Environmental Protection, radioactive substance management at MSZ JSC is organised so that release of radioactive waste (RAW) into the environment is excluded.



Radioactive substance contents in MSZ JSC's effluents do not exceed and are substantially lower than the specified standards rates of discharge. No significant changes in discharge activity were observed throughout 2019 – 2023.

DIAGRAM 6. EVOLUTION OF ACTUAL RADIONUCLIDE DISCHARGES, BQ/YEAR



No radioactive substances are discharged into water bodies at MSZ JSC. The Federal Environmental, Industrial and Nuclear Supervision Service of Russia sent its letter No. 06-02-05/582 dated April 15, 2022 addressed to MSZ JSC about the need to develop and specify standard rates for the allowable discharges.

Radionuclide discharges are monitored by MSZ JSC's Nuclear and Radiation Safety Service in accordance with the annual industrial environmental control (IEC) schedule.

6.3. Releases into Atmospheric Air

In 2021, MSZ JSC took re-inventory of pollutant emitting sources and releases thereof into atmospheric air; the quantitative estimates of maximum allowable pollutant atmospheric emission limits for MSZ PJSC's with a 7-year validity period has been established (Annex 1 to the Declaration of MSZ JSC's Environmental Impact).

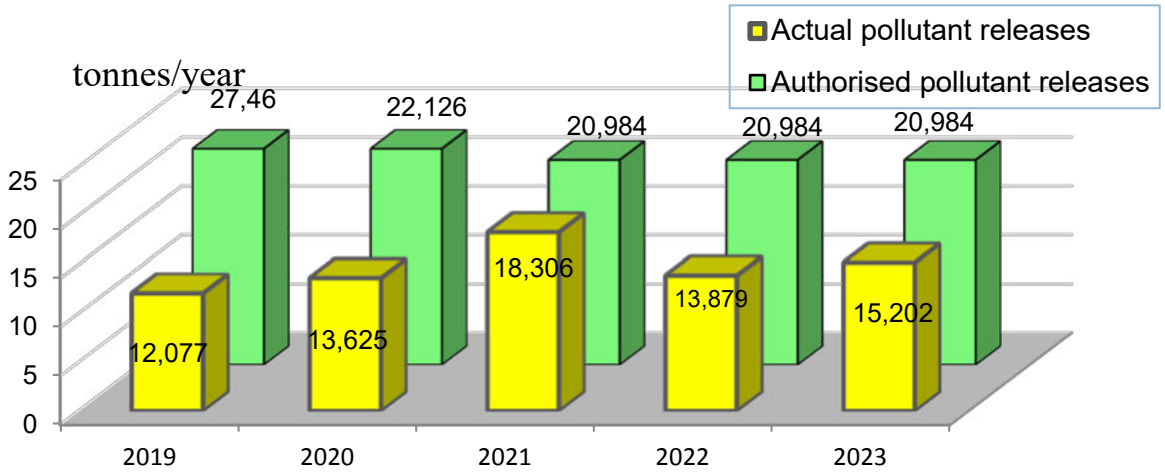
Since August 25, 2022, the Declaration of MSZ JSC's Environmental Impact with a 7-year validity period has been updated. The document has been registered by the Interregional Directorate of the Federal Service for Supervision of Natural Resources of the Russian Federation (Rosprirodnadzor of Russia) for the Moscow Region and the Smolensk Region.

6.3.1. Pollutant Releases

In 2023, MSZ JSC's chemical pollutant releases into atmospheric air amounted to 15.202 tonnes, whereas the allowed quantity is 20.984 tonnes/year.

The authorised gross release amount was reduced because MSZ JSC had optimised its production areas, re-engineered its manufacturing flow-processes as well as upgraded its equipment.

DIAGRAM 7. EVOLUTION OF POLLUTANT RELEASES INTO ATMOSPHERIC AIR (TONNES)



Gross pollutant releases into atmospheric air are lower than the specified standard rates.

The actual release of pollutants within 2019-2023 is interrelated with and dependant on the operating time of a number of emitting sources in MSZ JSC's functions, specifically, with/on the manufacturing equipment load.

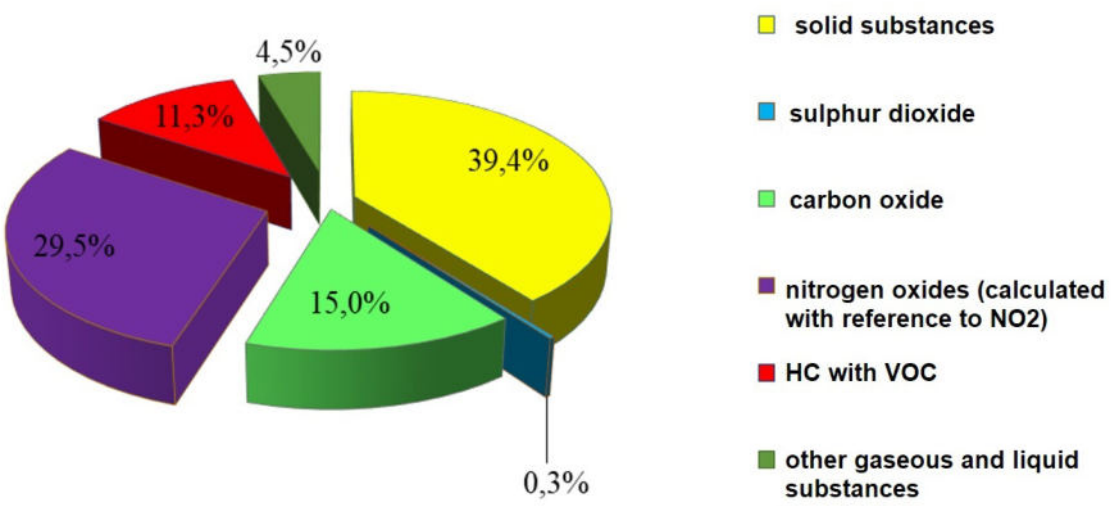
The Table below shows data on pollutant releases in 2023.

TABLE 2. DATA ON POLLUTANT RELEASES IN 2023

It. No.	Main pollutant	Hazard class	Maximum allowed release, tonnes/year	Actual release in 2023	
				tonnes / year	% of the standard rate
1	2	3	4	5	6
1	Gaseous and liquid substances (total), out of which:	-	14.091	9.205	65.3
nitrogen oxide (calculated with reference to NO_2)		3	6.162	4.487	72.8
sulphur dioxide		3	0.052	0.045	86.5
hydrocarbons (HC) with volatile organic compounds (VOC)		-	2.641	1.724	65.3
carbon oxide		4	4.075	2.284	56.0
other gaseous and liquid substances		-	1.161	0.665	57.3
2	Solid substances (total), out of which:	-	6.893	5.997	87.0
abrasive dust		tentative safe exposure level (TSEL)	0.972	0.933	96.0
iron oxide		3	2.121	1.335	62.4
black carbon (soot)		3	0.077	0.021	27.3
other solid substances		-	3.723	3.708	99.6
Total			**20.984**	**15.202**	**72.4**

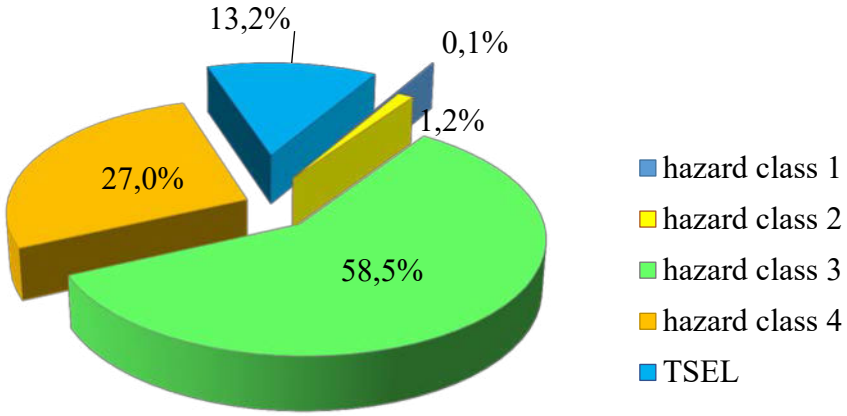
The largest contribution to pollutant releases into the atmosphere by MSZ JSC comes from solid substances and nitrogen oxides (Diagram 8).

DIAGRAM 8. COMPONENT-WISE COMPOSITION OF ACTUAL RELEASE OF HARMFUL POLLUTANTS INTO ATMOSPHERIC AIR IN 2023



Percentage distribution of actual pollutant releases in 2023 broken down by hazard classes of environmental impact is shown in Diagram 9.

DIAGRAM 9. POLLUTANT RELEASE DISTRIBUTION BY HAZARD CLASSES 2023



All the sources emitting a large volume of pollutants at MSZ JSC are equipped with high-efficiency gas treatment plants.

When renovating and upgrading production works, strong preference is given to the recirculation gas treatment plants that release the purified air into the working area and not into the atmosphere. At the same time, conditions in

the working area conform to the specified applicable sanitary and hygienic standard rates.

Annually actions are taken to reduce pollutant releases into atmospheric air.

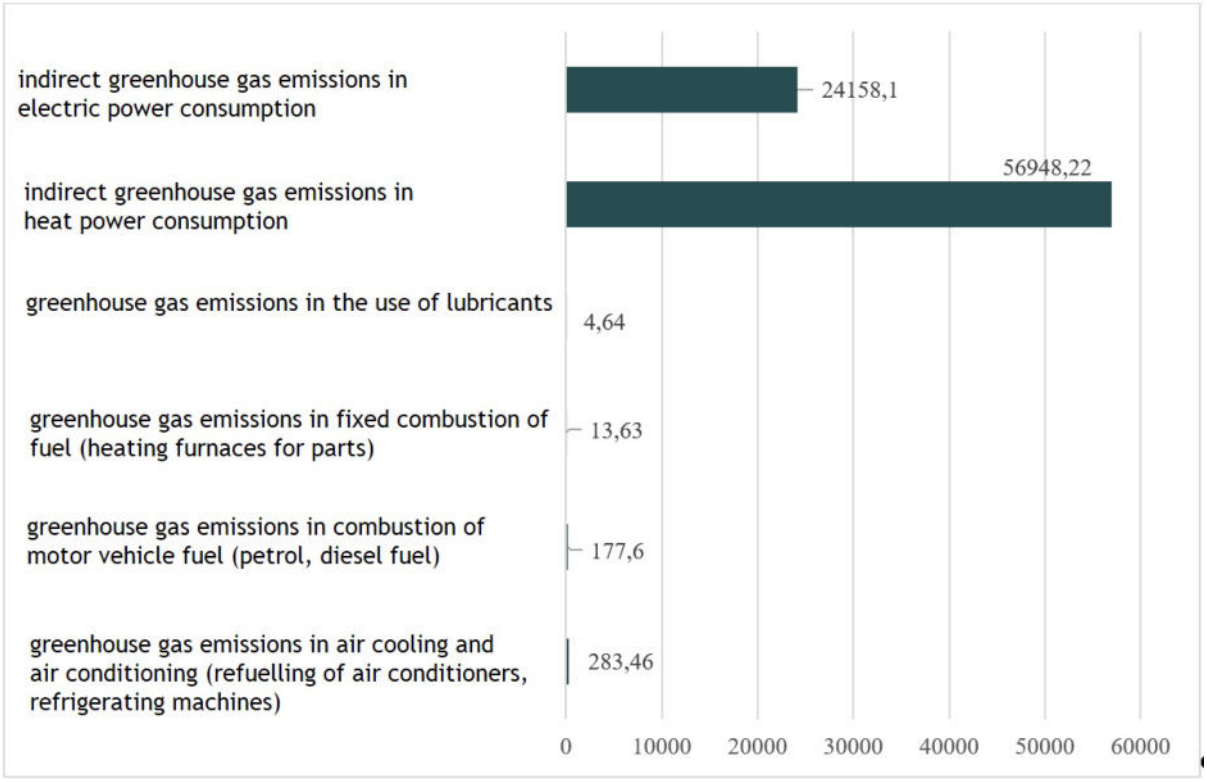
MSZ JSC continually replaces obsolete and worn special-purpose motor vehicles (lift trucks, tractors) as well as optimises their traffic routes by way of actions aimed at reducing their emissions.

MSZ JSC has established monitoring sites equipped with INFRALIGHT devices to provide on-time and good quality servicing of the special-purpose motor vehicles with the purpose to reduce pollutant releases together with exhaust gas emissions from the special-purpose motor vehicles.

6.3.2. Greenhouse gas releases

In accordance with the requirements specified in Federal Law No. 296-FZ dated July 2, 2021, On Limiting Greenhouse Gas Emissions, MSZ JSC has organised accounting and limiting of greenhouse gas emissions.

DIAGRAM 10. GREENHOUSE GAS RELEASE CATEGORIES, TONNES CO_2/YEAR



The largest contribution to greenhouse gas emissions into the atmosphere by MSZ JSC comes from refrigerants in refuelling of air conditioners and process refrigerating machines as well as from petrol and diesel fuel in the use of lift trucks and road machinery.

In 2023, MSZ JSC's direct greenhouse gas emissions stood at 479.33 tonnes CO_2/year. The company's direct greenhouse gas emissions are generated by:

- combustion of fuel (petrol, diesel fuel) in special-purpose motor vehicles (lift trucks, tractors);

- - combustion of natural gas in furnaces at the manufacturing site of shop 52;

- R-22, R-407C, R410A and R-507 refrigerant releases in operation and refuelling of refrigerating machines (in CO2-equivalent).

- R-22 refrigerant releases in operation and refuelling of air conditioners (in CO_2-equivalent);

- solvent (refrigerant 20) releases in analytical measurements.

Based on Executive Order No. 2979-p dated October 22, 2021, of the Government of the Russian Federation, HCFC-22 and HCFC-20 are not included in the list of greenhouse gases for which the state records of greenhouse gas emissions are kept and the greenhouse gas inventory is maintained. In 2023, air conditioners and refrigerating machines were not refuelled with R-22. Ozone-depleting index for R-134a, R-410A and R-407C refrigerants equals zero.

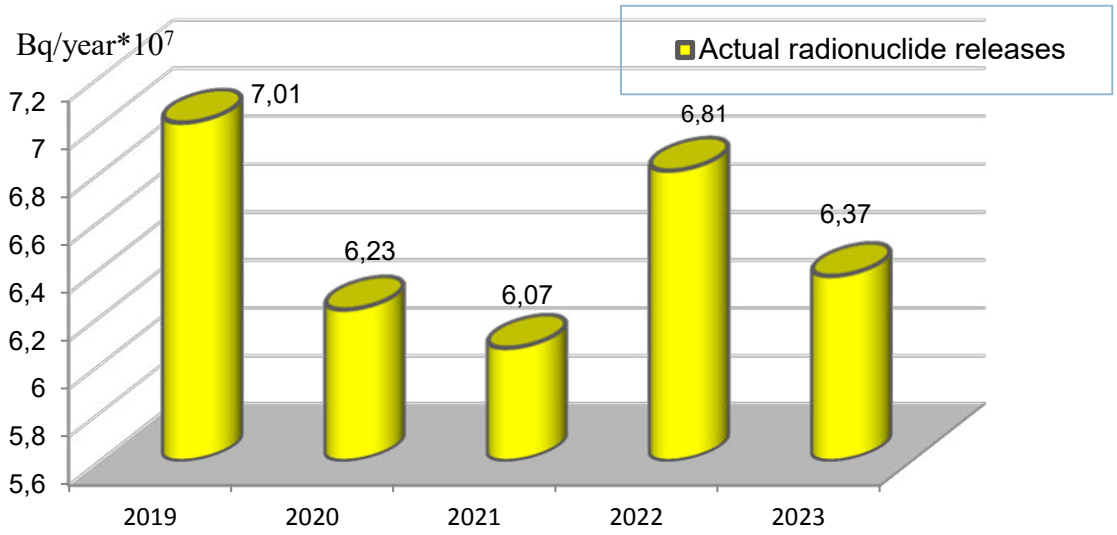
The applicable action plan for reducing halocarbon (Freon^{TM}) utilisation in refrigerating machines has been established, based on which refrigerating machines (chillers) were switched to R407C and R410A refrigerants. Obsolete and worn refrigerating machines have been put on production standby to be subsequently decommissioned. In 2022-2023, refrigerating machines were not in operation, therefore no ozone-depleting substance emissions occurred.

6.3.3. Radionuclide Releases

MSZ JSC radioactive substances are released based on Authorisation for Radioactive Substance Release in the Atmosphere No. ГН-ВР-0048 dated April 20, 2024, with the maximum allowed radionuclide release value of $2.21*10^{11}$ Bq/year, issued by the Federal Environmental, Industrial and Nuclear Supervision Service of Russia. Until May 1, 2023, this was done based on Authorisation for Radioactive Substance Release in the Atmosphere No. ГН-ВР-0019 dated July 1, 2021, with the maximum allowed radionuclide release value of $3.24*10^{12}$ Bq/year.

Long-term observations demonstrated that at MSZ JSC radionuclide releases are well below the allowed standard rates, and in 2023 they amounted to $6.37*10^{7}$ Bq/year.

DIAGRAM 11. EVOLUTION OF RADIONUCLIDE RELEASES IN 2019-2023 (Bq/year×10^7)



Decrease in radionuclide release into the atmosphere demonstrated in 2019-2023, as compared to 2019, was related to the reduction in the runtime of the sources of radioactive substance release into the atmosphere.

Actual radionuclide releases expressed as portions of the allowed releases are given in Table 3.

TABLE 3. ACTUAL RADIONUCLIDE RELEASE EXPRESSED AS PORTIONS OF THE ALLOWED RELEASE, IN 2019-2023

Radionuclide	Actual radionuclide release expressed as portions of the allowed release				
	2019	2020	2021	2022	2023
Sum total of α-radionuclides	0.00007	0.00006	0.00002	0.00002	0.00029

Radionuclide concentration in the air in MSZ JSC's location area, according to the data provided by radiation monitoring, is below the specified sanitary and hygiene standard rates, which indicates that there is an allowable radiation impact on human and environment.

All ventilation systems (both process as well as general) in MSZ JSC's shops, where radioactive substances are handled, are equipped with state-of-the-art high-efficiency filters providing 99.9 – 99.99 % purification – with the purpose to assure environmental safety and exclude radionuclide releases into the atmosphere.

6.4. Wastes

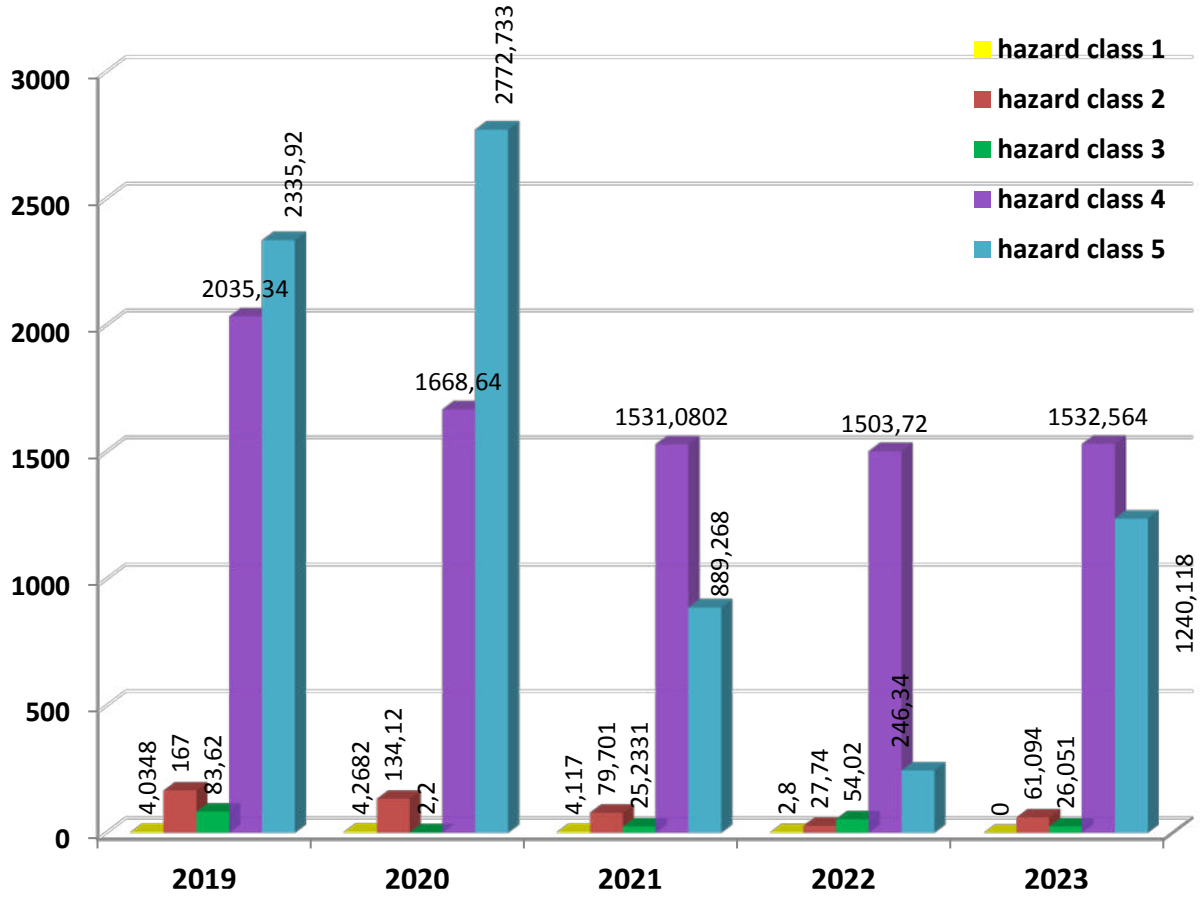
6.4.1. Production and Consumer Waste Management

There is a functioning production and consumer waste management system in place at MSZ JSC. There is an established procedure for initial collection, accumulation and removal of waste. In order to improve the waste management system, MSZ JSC implements shop-wise accounting of generated waste and monitors waste market with the purpose to conclude agreements for waste disposal with its maximum availability for using or processing.

Waste generated in 2023 amounted to 2859.827 tonnes. The decrease in waste in 2021-2023, as compared to 2019-2020, is attributed to the completion of the renovation of the surface run-off collection system in 2020 and the reduction in construction waste generated in renovation and construction activities. The increase in waste generation in 2023, as compared to the previous year, is attributed to the start of expanding the tube-rolling production as well as scrapping old railway wagons.

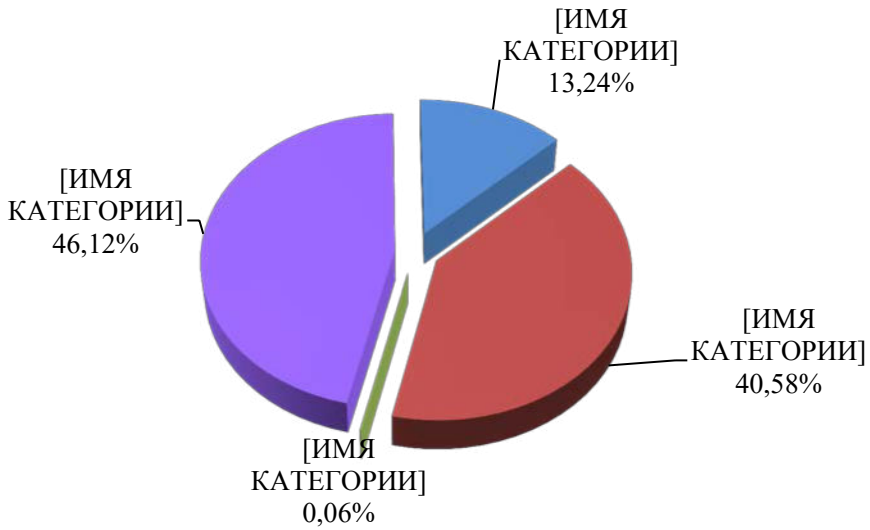
Liquid waste accounted for around 44%, solid waste – 56 %. The majority of waste (97 %) – is the waste pertaining to hazard class 4 and 5, i.e. the least hazardous.

DIAGRAM 12. SOLID WASTE DISTRIBUTION BY HAZARD CLASSES, IN 2019-2023 (TONNES)



As applied to waste, MSZ JSC steers either the course of maximum availability for using it within the company (class 5 waste) or for sending it to external organisations for disposal. If waste disposal is impossible to carry out, this waste is sent for decontamination or landfilling.

DIAGRAM 13. PERCENTAGE RATIO OF DISPOSED, DECONTAMINATED AND LANDFILLED WASTE IN 2023



MSZ JSC's Purchasing Department continually carries out activities related to market monitoring and concluding agreements with specialised enterprises for waste disposal and decontamination, at minimal expenditures.

6.4.2. Radioactive Waste (RAW) Management

There is a system for radioactive source and RAW management in place at MSZ JSC; all the activities within the scope of RAW management are carried out based on the applicable licence issued by the Federal Environmental, Industrial and Nuclear Supervision Service of Russia.

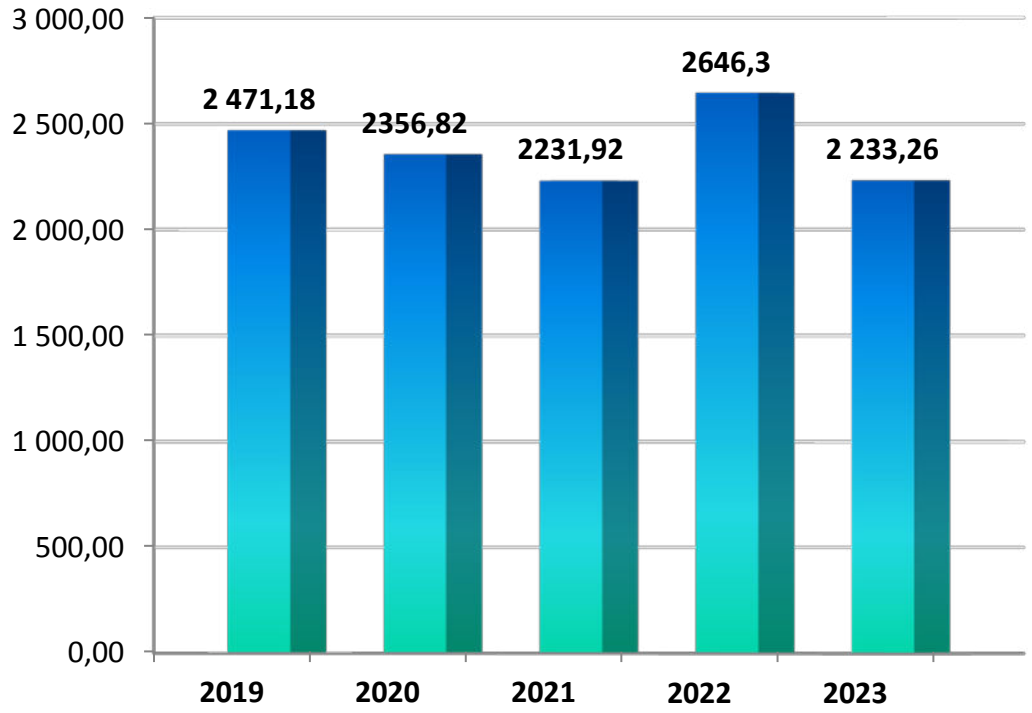
Within the scope of RAW management activities, MSZ JSC collects, processes, packs and provides temporary storage of the RAW generated in manufacturing activities; transports RAW within MSZ JSC's site by special-purpose motor vehicles as well as special-purpose pipelines; stores RAW in long-term storage facilities; provides solid RAW storage facility preservation; carries out accounting and control of RAW; monitors radionuclide content in RAW at various RAW management stages; carries out radiation monitoring of RAW discharges and releases.

Solid RAW is temporary stored in separate rooms/premises or at specially designated sites, equipped in accordance with the requirements specified for rooms/premises used in class II operations. Subsequently, RAW is sent to specialised companies FSUE RADON (the Federal State Unitary Enterprise –

United Ecological, Scientific and Research Centre of Decontamination of Radioactive Waste and Environmental Protection, ECOMET-S JSC and FSUE PA Mayak (the Federal State Unitary Enterprise – Production Association Mayak).

The waste generated at MSZ JSC in 2023 falls under the category of very low level radioactive waste (VLLW). In 2023, all in all, 2233.26 m^3 of RAW of $1.4x10^{10}$ Bq overall activity were generated. Out of which 2133.26 m^3 were placed in the long-term storage facility – building 294A, and 100 m^3 were sent to specialised RAW management organisations.

DIAGRAM 14. VARIATION IN QUANTITY OF RAW GENERATED AT MSZ JSC IN 2019-2023



6.5. Contamination Level of Atmospheric Air and Surface Waters at MSZ JSC, as Related to the Data on the Moscow Region and the City District of Elektrostal

This subsection is composed based on the consolidated data on atmosphere and surface water contamination levels prepared by the Federal State Budgetary Institution Central Department of Hydrometeorology and Environmental Monitoring (FSBI Central DHEM) – the institution specially authorised by RosHydromet to perform roles pertaining to hydrometeorology and environmental monitoring and reported in monthly reviews On Environmental

Pollution Levels and Radiation Situation within the Territory of Moscow and the Moscow Region for 2023.

Atmospheric air pollution surveillance in the City District of Elektrostal is conducted at two stationary sites of the national service for surveying the state of atmospheric air, where the following is measured: concentrations of suspended substances, sulphur dioxide, carbon oxide, nitrogen dioxide and oxide, chlorine, formaldehyde, benzo[a]pyrene and heavy metals. Such sites are grouped into the following categories: “city background” and “industrial”.

In 2023, atmospheric air contamination level in the City District of Elektrostal was assessed as low. As a result of occasional atmospheric air surveys, the maximum allowable single concentration (1.3 MAC) of nitrogen dioxide was recorded in the vicinity of Vtorov Street, building No. 10; and that of suspended substances (2.2 MAC) - in the vicinity of Vtorov Street, building No. 10 and Bulvar 60-letiya Pobedy, building No. 14. Year-average and maximum concentrations of remaining substances subject to be determined did not exceed the MAC.

Main contamination sources for large watercourses in the Moscow Region are still the inadequately purified domestic and production effluents as well as agricultural effluents introduced directly into the rivers and their feeders. Nitrogen and phosphorus compounds, suspended and organic substances, petroleum products, anionic surfactants, heavy metals are the characteristic pollutants.

In 2023, nitrite nitrogen content in the Moscow Region, on average, stood at 4 MAC; ammonium nitrogen – 2.2 MAC; nitrate nitrogen and phosphates – within the MAC limits. Ammonium nitrogen, nitrite nitrogen and phosphate contents decreased, as compared to 2022 level.

In 2023, contamination of the Moscow Region water bodies by heavy metals was insubstantial. Averaged concentrations of hexavalent chromium, nickel and lead were within the MAC limits; copper – 1.7 MAC and zinc – 3 MAC.

Assessment of water quality in watercourses and water reservoirs by specific combinatorial water contamination index performed in the Moscow Region in 2023 demonstrated that qualitative composition of surface waters is

represented by the following water quality classes: slightly contaminated, polluted, very polluted, dirty, very dirty and extremely dirty.

In 2023, there were no cases of high or extremely high water pollution recorded in water bodies – MSZ JSC's wastewater receivers (the Khodtsa river).

6.6. MSZ JSC's Location Area Condition

ENVIRONMENTAL IMPACTS OF MSZ JSC'S DISCHARGES, RELEASES, PRODUCTION AND CONSUMER WASTES ARE LIMITED TO MSZ JSC's INDUSTRIAL SITE AND THEY STAY WITHIN THE LIMITS OF THE SPECIFIED STANDARD RATES FOR DISCHARGES, RELEASES AND WASTE GENERATION LIMITS.

Within MSZ JSC's location area there are contaminated areas. Disrupted pieces of land are linked with the company's activities in the 40ies-50ies of the previous century (the period of the country's nuclear industry establishment) when this plant carried out operations within the scope of Atomic Project for building the country's "nuclear shield".

At MSZ JSC, FSBI Gidrospetsgeologia conducted a package of field and laboratory hydrogeological investigations under the following topic: "Survey of Radioactive Contamination Area Impacts on Sub-Soil Waters and Environment in the Northern Part of MSZ PJSC's Industrial Site". Based on the results of these activities a system of monitoring wells to control possible underground water contamination in the northern part of MSZ JSC's industrial site, consisting of 10 wells, has been organised.

In 2023, within the schedule of On-Site Subsoil Condition Monitoring (OSCM) as per MSZ PJSC's On-Site Subsoil Condition Monitoring Programme (No. 18/56-26дсп/2620 dated March 19, 2019) measurements were performed, which results revealed no changes towards worsening of subsoil conditions. In 2023, radiation monitoring showed that radiation situation in MSZ JSC's location area is characterised as stable.

6.7. Radiation Situation Overview of MSZ JSC's Location Region

This subsection is composed based on the consolidated data on atmosphere and surface water contamination levels prepared by the Federal State Budgetary Institution Central Department of Hydrometeorology and Environmental Monitoring (FSBI Central DHEM) – the institution specially authorised by Roshydromet to perform roles pertaining to hydrometeorology and environmental monitoring and reported in monthly reviews On Environmental Pollution Levels and Radiation Situation within the Territory of Moscow and the Moscow Region for 2023.

In 2023, the radiation environment in the Moscow Region was calm, with no observed values higher than the allowed limits. The year-average total volumetric particulate β-activity amounted to $12.6*10^{-5}$ Bq/m^3, which is by 0.3 Bq/m^3 lower than the previous year's level. The year-average value of the rate of the ambient equivalent of γ-radiation dose on the territory of the Moscow Region was within the fluctuations of natural γ-radiation background.

6.8. Energy Consumption

In 2023, energy consumption amounted to 75 007 thousand kW•h.

Reduction in energy consumption expressed in physical terms, as compared to 2020 values, amounted to 18 411 000 kW•h (25.18%).

REDUCTION IN ENERGY CONSUMPTION, IN COMPARABLE CONDITIONS TO THE BASELINE YEAR (2020), AMOUNTED TO 25.18%.

Reduction in energy consumption in 2023 has been achieved through:

- *carrying out a major overhaul of lighting networks, complete with the replacement of lamps for energy-saving ones;*
- *replacing old power transformers for new, modern ones;*
- *installing additional capacitor devices for reactive power compensation;*
- *major overhaul of furnaces, complete with rebricking;*
- *shops carrying out engineering and administrative activities to provide utility savings;*
- *replacing equipment for energy-efficient equipment;*
- *conservation of unused space and equipment.*

7. Environmental Policy Implementation

In order to minimise adverse impact caused by MSZ JSC's economic activities, funding is allocated annually for the measures aimed at environmental protection. With the purpose to implement MSZ JSC's environmental policy, as per MSZ JSC's Environmental Policy Implementation Plan (No. 18/76-09/263 dated October 20, 2023) for 2023, the activities related to implementing administrative measures continued in 2023.

IN 2023, TOTAL ENVIRONMENTAL PROTECTION-RELATED EXPENDITURE AMOUNTED TO ABOUT 263 MLN ROUBLES (SEE TABLE 4).

TABLE 4. TOTAL ENVIRONMENTAL PROTECTION-RELATED EXPENDITURE

It. No.	Expenditure	Actual value for the year, thousand roubles
1	Operating (operational) costs	132 316
2	Payments for environment conservation services	129 695
3	Overhauling costs of environmental protection-related fixed assets	0
4	Investments in the fixed assets allocated for environmental protection and sustainable use of natural resources	300
5	Environmental impact fee	473
	Environmental protection-related expenditure, in total	**262 784**

The operating costs related to environmental protection comprise the costs for maintenance and operation of MSZ JSC's fixed assets intended for environmental conservation purposes, the costs for radiation safety-related instrumental and laboratory measurements as well as salary costs for the company's environmental specialists.

The payments for environment conservation services comprise the costs for the outsourced services provided to ensure operability of the equipment included in the environment conservation list, the costs for measurements and studies of physical effects as well as the costs for advanced training of environmental protection-related specialists.

The costs for investments in the fixed assets comprise the costs for process ventilation reconstruction on local gas treatment systems' basis carried out in one of MSZ JSC's shops.

In 2023, within the structure of payments for adverse environmental impact, discharge fee accounted for 99.5%, release (emission) fee – for 0.4%, and production waste disposal fee – for 0.1 %.

8. Environmental and Public Outreach Activities. Public Acceptance

8.1. Interactions with Public and Local Authorities

For preserving the environment, it is necessary to join all the parties' efforts – efforts of public and local authorities as well as efforts of the population. MSZ JSC is one of the township-forming enterprises, which imposes the particular responsibility towards the residents of the City District of Elektrostal.

WORK IN COOPERATION AND OPENLY WITH THE RELATED LOCAL, REGIONAL AND FEDERAL PUBLIC AUTHORITIES IS ONE OF THE PRINCIPLES OF MSZ JSC'S ENVIRONMENTAL POLICY.

MSZ JSC takes an active part in social life of the City District of Elektrostal, the Moscow Region.

In August 2023, the formal opening ceremony of the pocket park named after Savva Ivanovich Zolotukha, Honorary Citizen of the city and famous director of MSZ JSC took place in the City District of Elektrostal. This pocket park opened at the intersection of Komsomolskaya and Zolotukha Streets in the result of a joint project of the Administration of the City District of Elektrostal and MSZ JSC and was implemented within the scope of the National Presidential Programme for Housing and Urban Environment. Inna Volkova (Head of the City District of Elektrostal), Natalia Nikipelova (President of TVEL JSC) and Dmitry Bagdatyev (Director General of MSZ JSC) took part in the opening ceremony of this pocket park that has a memorial stone dedicated to S.I. Zolotukha in its centre.

As part of outreach activities, MSZ JSC employees carried out the second stage of the Let's Talk about Birds event, during which specialists of the Environmental Protection Department and the 1st grade pupils of the Municipal General Education Institution - General Secondary School No. 1 (building 2) talked on the specifics of how to behave yourself while in a forest and how to help birds in the warm season, after which they took down bird feeders for the summer season. The joint project was awarded a special prize diploma from Nikita Anisimov within the IV International Children and Youth Award titled "Ecology Is Everyone's Business" approved by the Federal Service for Supervision of Natural Resources of the Russian Federation.

8.2. Interactions with Environmental Non-Governmental Organisations (NGOs), Scientific and Social Institutions as well as the Population

An equally important process in the implementation of MSZ JSC's environmental ideas is the interaction with environmental NGOs, scientific and social institutions as well as the population.

To maintain the high environmental safety level of production and to reduce potential adverse environmental impact thereof as much as possible, to work out and implement scientifically justifiable solutions for improving the environment and for sustainable use of natural resources MSZ JSC for decades has been working hand-in-glove with the Biophysics Institute named after A.I. Burnasyan, the Federal State Budgetary Institution Gidrospetsgeologia (FSBI Gidrospetsgeologia), the Federal State Unitary Enterprise – the All-Russian Scientific and Research Institute of Groundwater Hydrology and Engineering Geology (FSUE VSEGINGEO), the State Unitary Enterprise – Leading Scientific and Research Institute of Chemical Technology, the Federal State Budgetary Institution – the Institute of Mineralogy, Geochemistry and Crystal Chemistry of Rare Elements (FSBI IMGRE), the Scientific and Research Institute of Environmental Issues (NIIPE), the V.I. Vernadsky Nongovernmental Ecological Foundation, the Federal State Budgetary Healthcare Institution (FSBHI) Hygiene and Epidemiology Centre No. 21 of the Federal Medical-Biological Agency of Russia, the State Scientific Centre of the Russian Federation - Leipunsky Institute of Physics and Power Engineering, Joint-Stock Company (JSC SSC RF IPPE), etc.

Each year MSZ JSC trains its employees on topics related to environmental conservation. In 2023, 12 company employees received advance training on environmental protection & safety (under the following programmes: Hydraulic Engineering Structures at Facilities, Environmental Requirements for Design, Construction and Reconstruction of Buildings and Structures, etc.) at educational institutions.

In April 2023, company employees held a voluntary clean-up day in celebration of MSZ JSC's 106th anniversary. Activists from the MSZ JSC's Youth Organisation, heads of MSZ JSC's functions and college students joined their efforts to clean the eastern side of the city, including the territory of Central Medical Sanitary Department No. 21 of the Federal Medical-Biological Agency of Russia (the City District of Elektrostal).

MSZ JSC, together with the city's libraries, organised and implemented a career guidance project named "Where I Was Born, There I Can Be Useful", aimed at engaging with the younger generation on choosing their future professions.

In 2023, MSZ JSC employees took part in a webinar conference on sustainable use of natural resources and review of environmental documentation of companies organised by ECO CENTRE Group of Companies, in a webinar on updating environmental conservation documentation, organised by OOO

Centre for Legal Support of Environmental Conservation (a limited liability company), in section 3 discussions on Provision of Ecology, Nuclear and Radiation Safety held by the Research and Development Board of TVEL JSC, in the industry-specific research and engineering seminar on hydraulic structure safety (remotely), in the research and practise seminar on Radiation Safety and Environmental Protection in Nuclear Industry organised by the General Inspectorate of SC Rosatom as well as attended 2023 International Integrated Safety and Security Exhibition, the XIV Inter-Branch Conference – Water in Industry 2023, the VII All-Russian Water Congress 2023 and VODEXPO 2023 exhibition.

In 2023, within the scope of the industry-specific project called "Furry Atom", MSZ JSC employees once again took part in a charity event aimed at providing assistance to the animal shelter in Noginsk. As part of this project, a children's drawing competition titled "Everyone Needs a Family" was organised among children of MSZ JSC employees, directed at providing knowledge to the younger generation about the life of homeless animals and drawing public attention to this project.

8.3. Public Awareness

SZ JSC ACTIVELY PARTICIPATES IN ALL SOCIAL PROGRAMMES, ENVIRONMENTAL INCLUDED. REPRESENTATIVES OF REGULATORY AUTHORITIES, RUSSIAN COLLEAGUES, FOREIGN PARTNERS, STUDENTS, JOURNALISTS, BUSINESS COMMUNITY MEMBERS AND PUBLIC OFFICERS VISIT THE COMPANY ON A REGULAR BASIS.

In 2023, to spread awareness among all the interested parties/persons, all the issues related to MSZ JSC's environmental conservation activities and the company's environmental impact received wide coverage in feature radio-broadcasted programmes as well as TV spots, but also in the topic-related information graphics and daily aired via the distribution broadcasting system (information screens).

Within the scope of Fuel Company TVEL JSC's communication project – the Chemical Club, pupils of educational institutions of the City District of Elektrostal periodically visit MSZ JSC's Central Plant Laboratory to learn about how the spectral laboratory, the metallography laboratory and the isotopic laboratory works.

One of the principles on which MSZ JSC's activities are based is transparency and availability of environmental information as well as constructive interactions with interested parties, that is why MSZ JSC's Environmental Policy as well as the Environmental Safety Report are public documents posted on the company's website as well as made available in MSZ JSC's Information Centre. This information is used when participating in exhibitions and outreach activities.

9. Contact Information

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