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# 1. MSZ JSC's Overview and Core Activities

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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 to the frontlines 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).

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

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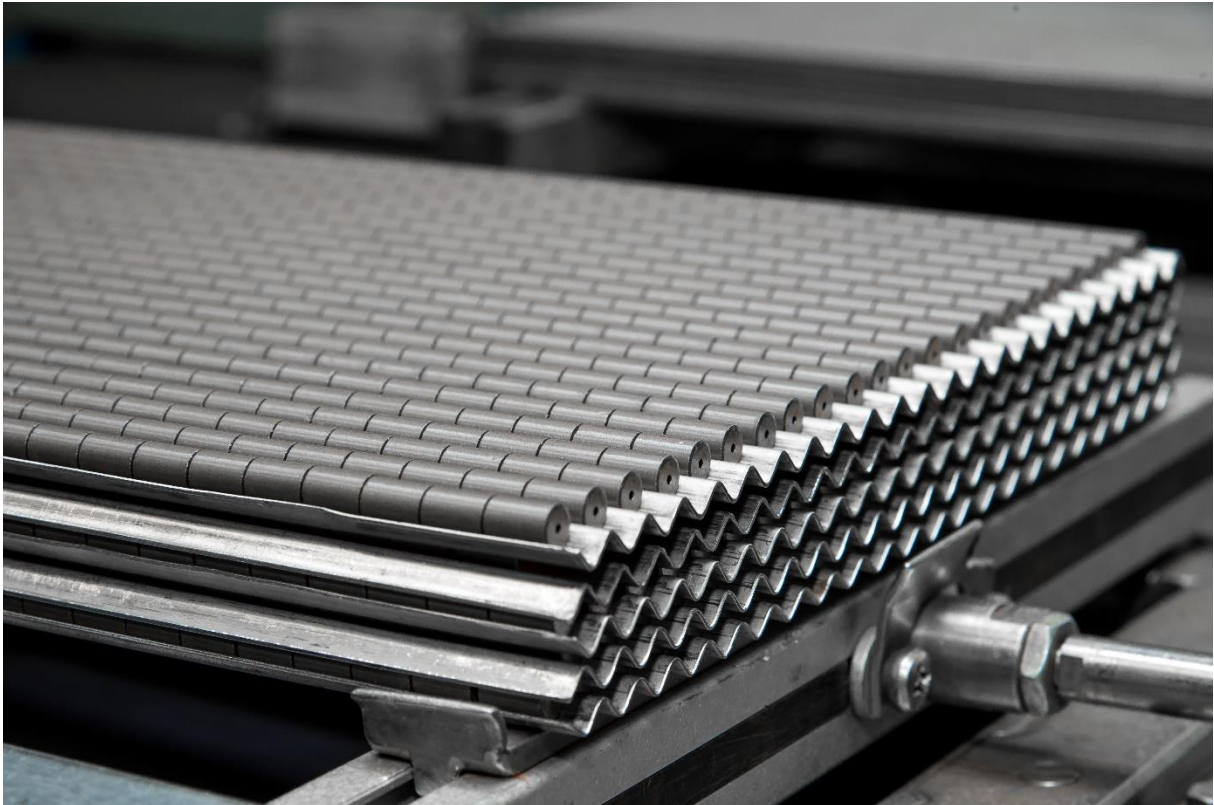
Within the company’s premises, there are 8 shops, 4 laboratories, company functions and services as well as a dependent subsidiary company (OOO MSZ-Mekhanika, a limited liability company).

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 the control and protection system (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.

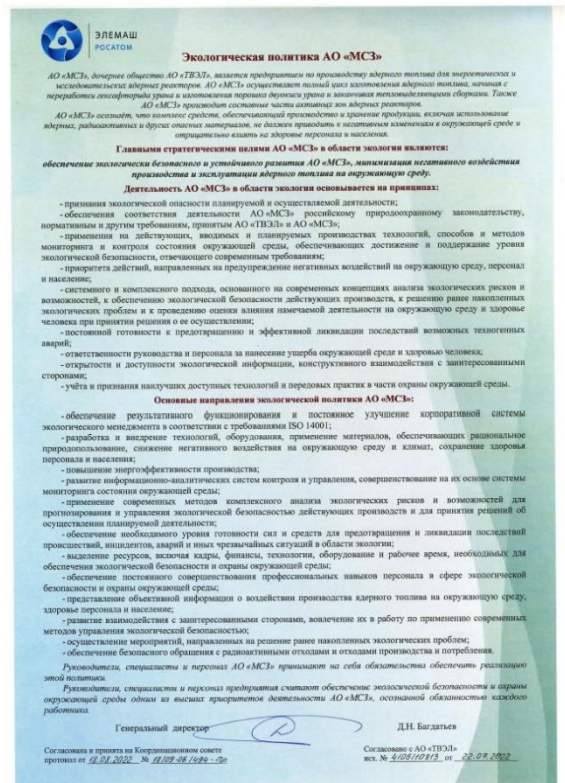
Over the past five years, MSZ JSC was presented with high awards in recognition of its employee team's contribution to the cause of environment preservation: the merit badge for the contribution to environmental culture and safety culture of Rosatom, the winner's diploma in "Environment-Friendly Nuclear Industry Model Organisation" contest under the special nomination of "Environment-Friendly Model Organisation of TVEL JSC" and award "For the Shown Initiative and Significant Contribution to the Cause of Environment Protection" by V.I. Vernadsky Nongovernmental Ecological Foundation.

## 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-Пp dated August 18, 2022).

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.



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**MSZ PJSC'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.**

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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)

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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).*

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 9587, 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

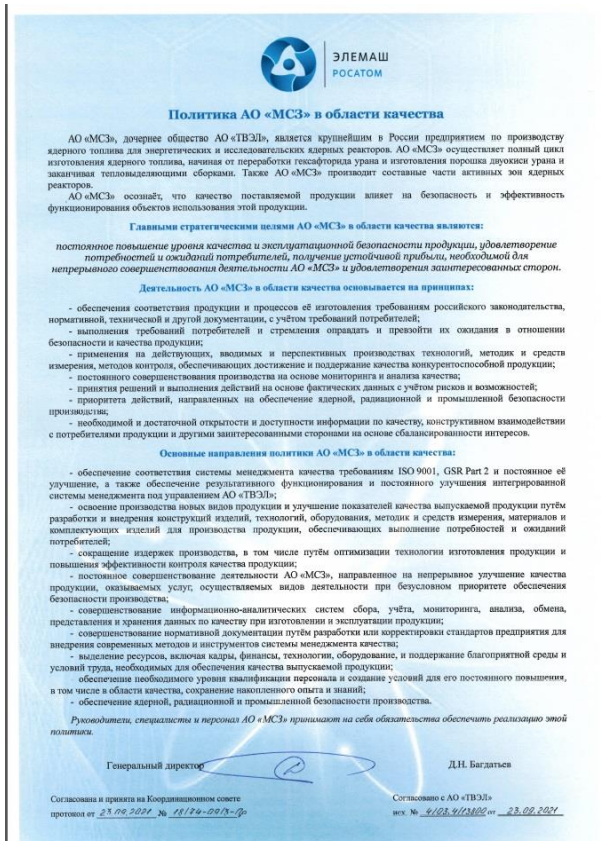
components along with control and protection system (CPS) components for power reactors.

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:

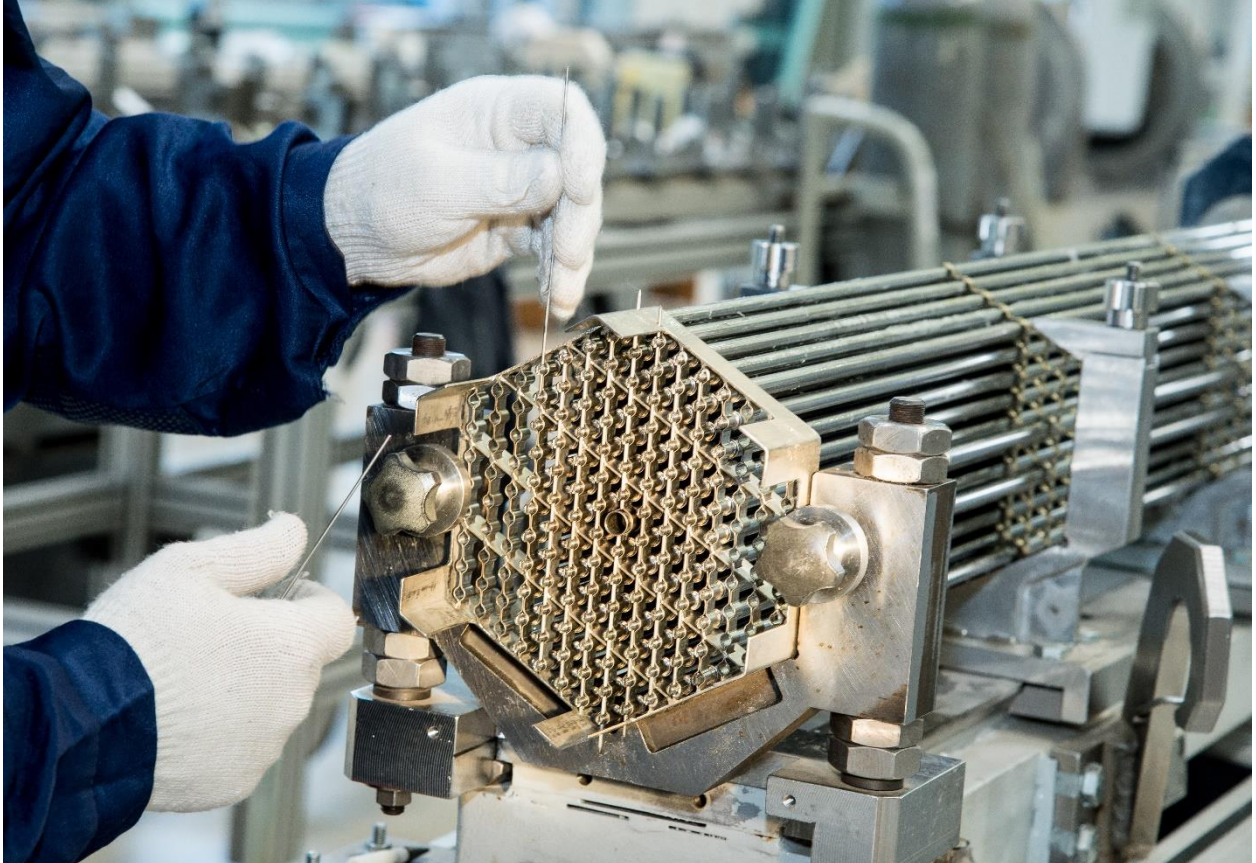
- continual improvement of product quality and operational safety;
- meeting customer needs and expectations;
- securing sustainable profits needed for continual improvement of MSZ JSC's activities as well as satisfaction of the interested parties.

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.



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

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MSZ JSC has issued the valid Register of Environmental Protection Regulations and Regulatory Documents No. № 18/76-09/79 dated 15.03.2022, comprising 384 documents, which requirements apply to MSZ JSC's activities.

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

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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...);*
- *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-II 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;*
- *Decision on Making the Water Body Available for Use No. 50-09.01.03.006-P-PCBX-C-2017-03917/00 dated June 1, 2017. Valid through May 31, 2023;*
- *Resolution of the Government of the Russian Federation No. 353 dated March 12, 2022, On the Specifics of Licensing Activities in the Russian Federation in 2022;*
- *Authorisation for Radioactive Substance Discharge in Water Bodies No. ЦО-115-19/18pc dated November 16, 2018. Valid through November 16, 2023;*
- *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. ΓH-BP-0019 dated June 28, 2021. Valid through July 1, 2028;*
- *Licence for Radioactive Waste Management When It Is Processed, Stored and Transported No. ΓH-07-115-4076. Valid through May 31, 2022;*
- *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

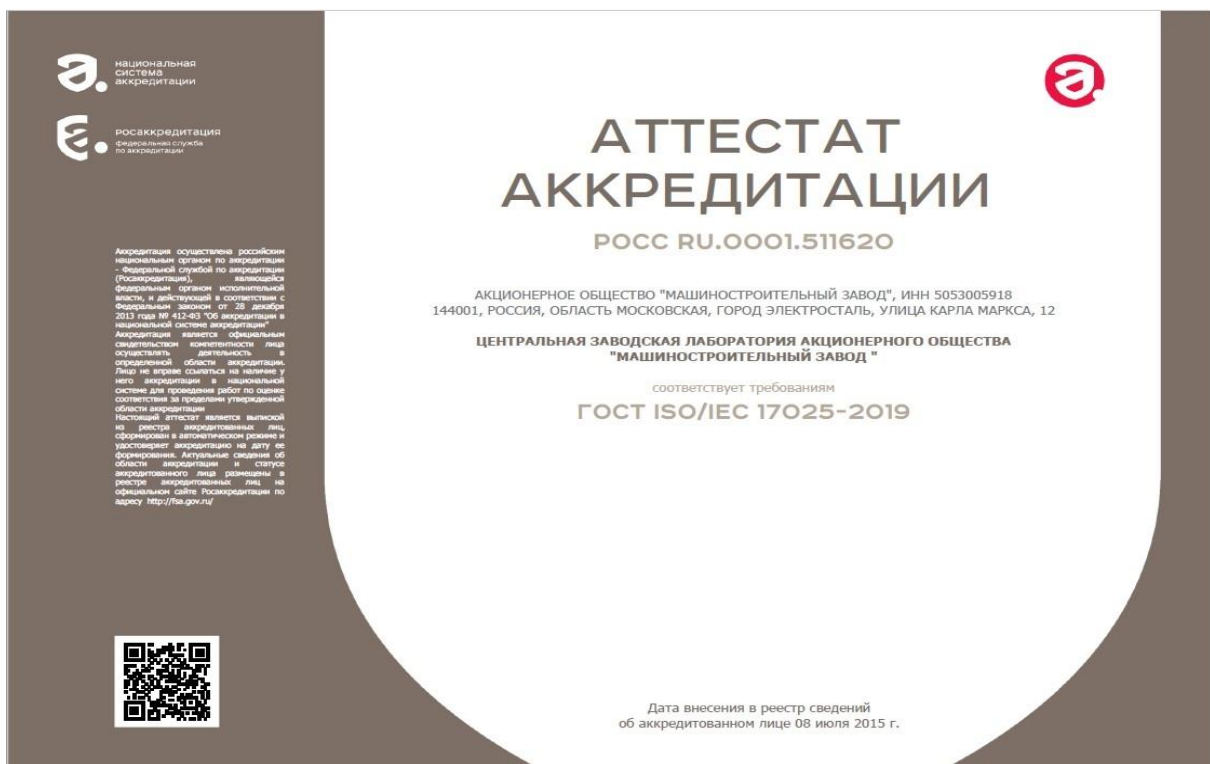
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In accordance with the requirements defined in article 67 of Federal Law No. 7-FZ dated January 10, 2002, On Environmental Protection, article 11 of Federal Law No. 3-FZ dated January 9, 1996, On Radiation Safety of the Population, article 32 Federal 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. POCC RU.0001.511620 and RA.RU.22ЭЛ36 issued by the Federal Accreditation Service of the Russian Federation (Rusaccreditation).

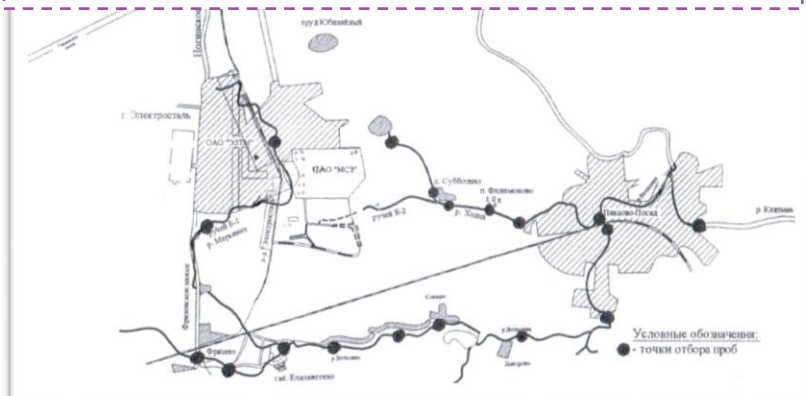
The laboratories use the most advanced devices and measuring instruments: spectrophotometers, spectrometers, spectrofluorimetric analysers, photoelectrocalorimeters, ion meters, oxygen meters, dosimeters,  $\alpha$ - $\beta$ -radiometers, radon (Rn) radiometers as well as other laboratory-scale equipment.

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.

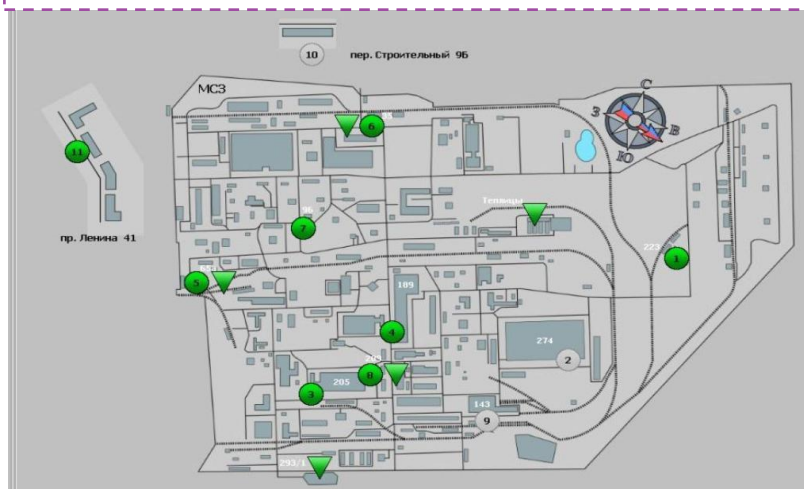
The laboratory staff who perform sampling and monitor pollutant discharges and releases continually advance their qualifications in the specialised general-education institutions accredited to carry out training/education activities.

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

*Location map of monitoring points outside MSZ JSC's premises*



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





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  $\gamma$ -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);*
- *$\gamma$ -radiation dose rate monitoring sensors БДМГ-100 (5 pcs.);*
- *meteorological system MK-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  $\alpha$ -emitting radionuclides in atmospheric air;*
- *$\gamma$ -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-II 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 Hydrospeztzgeologiya 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 2022 as per the schedule of the On-Site Subsoil Condition Monitoring Programme demonstrated changes towards worsening of subsoil conditions.

2022 environmental control and monitoring yielded the following results:

- *annual average radionuclide volumetric  $\alpha$ -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  $0.01 \text{ Bq/m}^3$ , which does not exceed the specified level of  $0.03 \text{ Bq/m}^3$ ;*

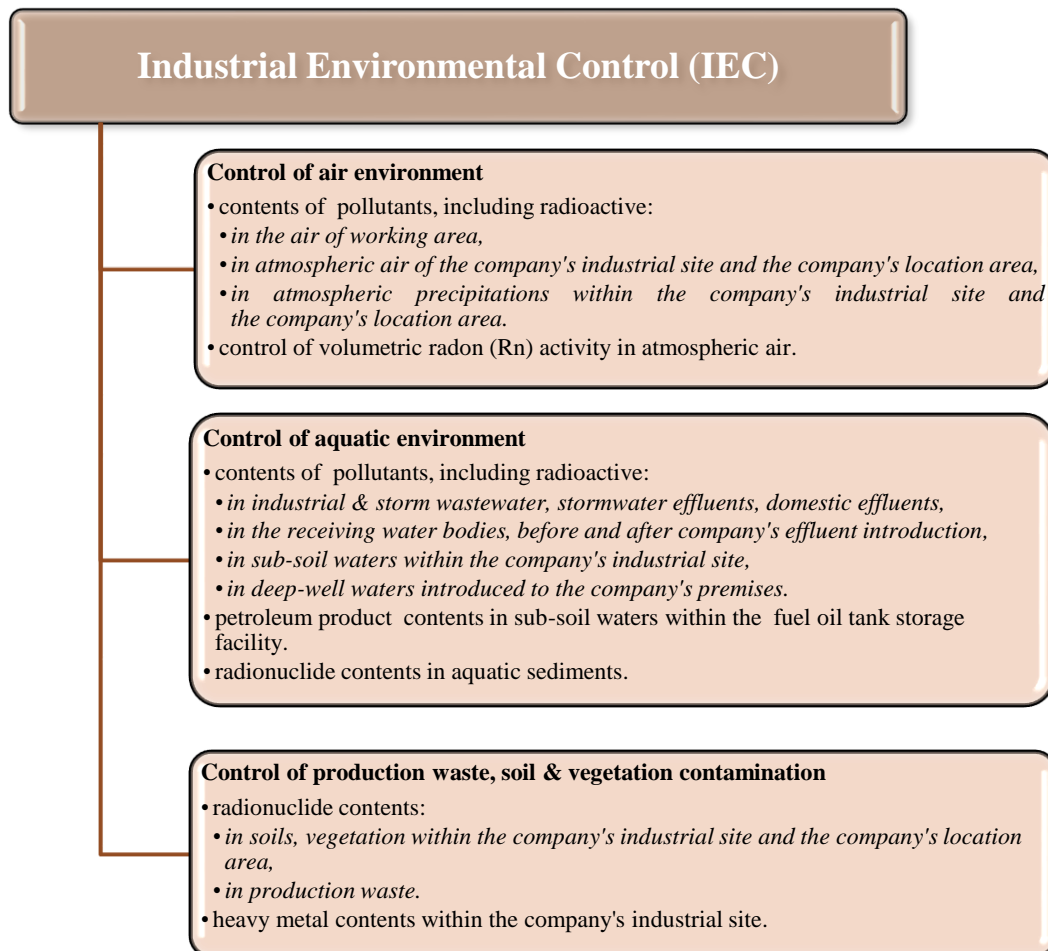
- *annual average total specific  $\alpha$ -activity of radionuclides in water of open water bodies within the sanitary protection zone stood at 0.24 Bq/kg, in river water within MSZ JSC's location area stood at 0.536 Bq/kg, which does not exceed the specified level of 2.6 Bq/kg;*
- *annual average total specific  $\alpha$ -activity of radionuclides in atmospheric precipitation (snow) within MSZ JSC's location area stood at 0.13 Bq/kg and within the company's premises this parameter stood at 0.21 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 241 Бк/кг, and of receiving water bodies within MSZ JSC's location area this parameter stood at 204 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 (<200 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 362 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  $\gamma$ -radiation equivalent dose rate within MSZ JSC's industrial site stood at 0.17  $\mu$ Sv/h, whereas within MSZ JSC's location area this parameter stood at 0.13 мкЗв/час,  $\mu$ Sv/h; annual average external radiation equivalent dose rate at the sanitary protection zone boundary stood at 0.17  $\mu$ Sv/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 project of MSZ PJSC's Sanitary Protection Zone (affirmative sanitary and epidemiological certificate No. 50.21.01.000.T.000005.02.14 dated February 14, 2014, executive order of the Administration of the City District of Elektrostal No. 213-p dated April 10, 2014) has been released with the boundaries within:

- 300 m in the direction of northern, eastern, south-eastern, southern, south-western, western quadrant bearing;
- 50 m in the direction of north-eastern quadrant bearing;
- 150 m in the direction of north-western quadrant bearing from the industrial area boundaries.

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. 1029 dated September 28, 2015,

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 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

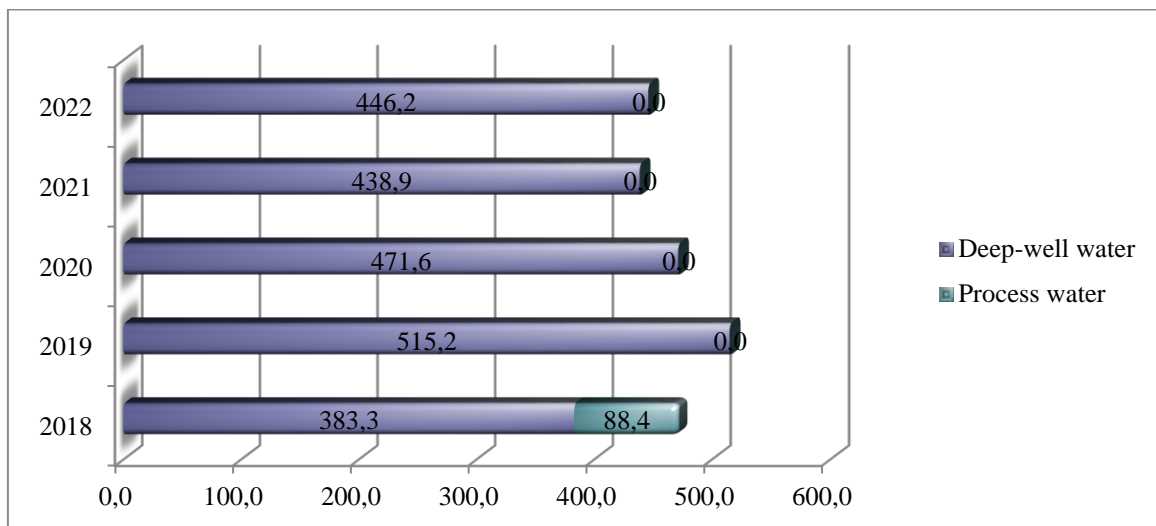
### 6.1. Source Water Intake

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 MCK 06379 BЭ (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<sup>3</sup>/day (1951.300 thousand m<sup>3</sup>/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<sup>3</sup>)**



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<sup>3</sup>, 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 Volkhonka river – the right feeder of the Klyazma river.

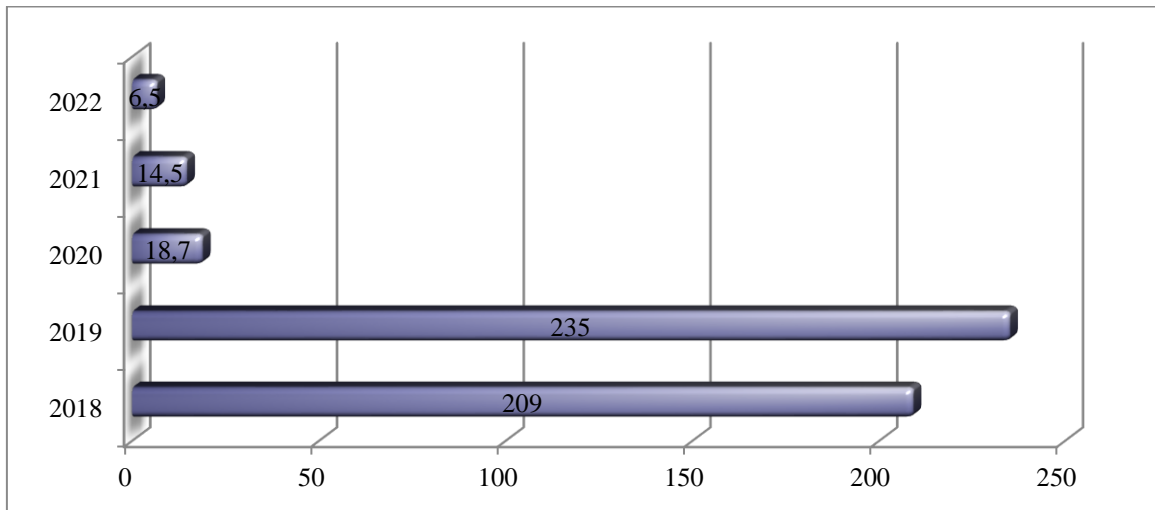
Domestic wastewater is introduced in the city's sewage conduit and carried to the treatment facilities situated in the city of Pavlosky Posad. After biological treatment, wastewater is introduced into the open hydrographic network – the Klyazma river.

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 (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<sup>3</sup>)**





### 6.2.1. Pollutant Discharges

In 2022, actual harmful chemical substance discharge in the stormwater sewers amounted to 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.

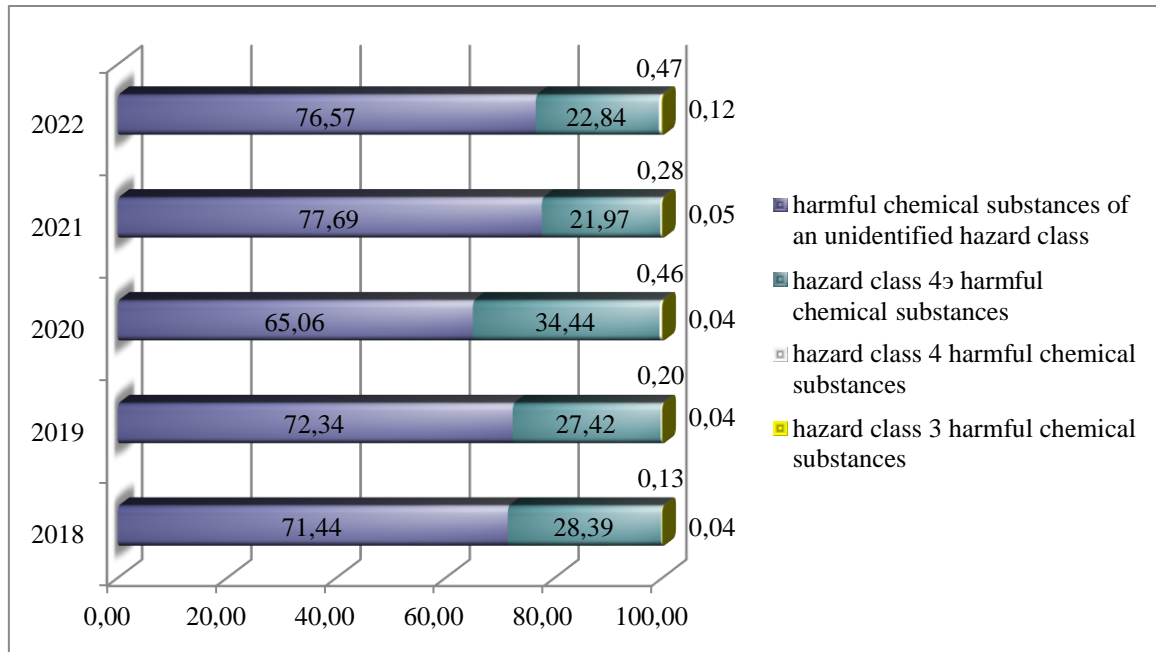
Contribution of substances belonging to:

- *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 4a (environmental) – up to 22 % (chloride anion, phosphates, nitrate anion, nitrite anion).*

Substances of unidentified hazard class account for up to 78% (dry residue, COD, BOD<sub>total</sub>, 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 2022 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 2022, tonnes
1	ammonium ion	4	1.810
2	BOD total	-	0.957
3	suspended substances	-	2.091
4	iron	4	0.025
5	copper	3	0.001
6	petroleum products (petroleum)	3	0.031
7	nitrate anion	4ə	30.570
8	nitrite anion	4ə	0.086
9	sulphate anion (sulphates)	-	25.085
10	dry residue	-	249.586
11	phosphates (by phosphorus)	4ə	0.035
12	fluoride anion	3	0.414
13	chloride anion (chlorides)	4ə	57.533
14	COD	-	18.100
15	zinc	3	0.003

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 ( $\text{MAC}=0.001 \text{ mg/dm}^3$ ) and zinc ( $\text{MAC}=0.01 \text{ mg/dm}^3$ ) are more stringent than in distilled water and by total iron ( $\text{MAC}=0.1 \text{ mg/dm}^3$ ), ammonium ion ( $\text{MAC}=0.5 \text{ mg/dm}^3$ ) as well as petroleum products ( $\text{MAC}=0.05 \text{ mg/dm}^3$ ) 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 2022, actual discharge of harmful chemical substances into the domestic sewers and amounted to 264.943 tonnes.

396.81 thousand  $\text{m}^3$  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)**

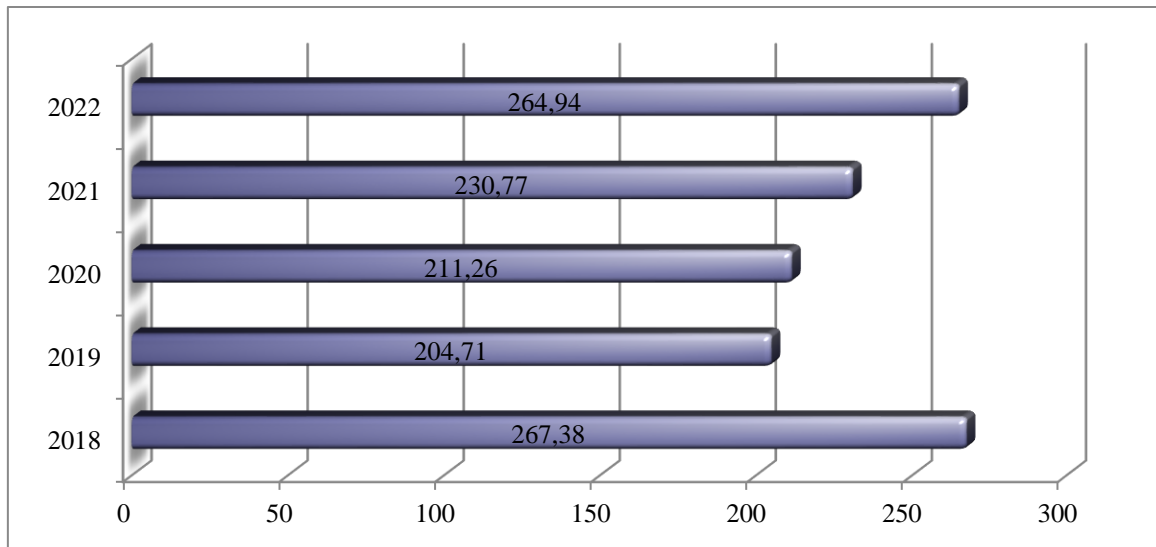
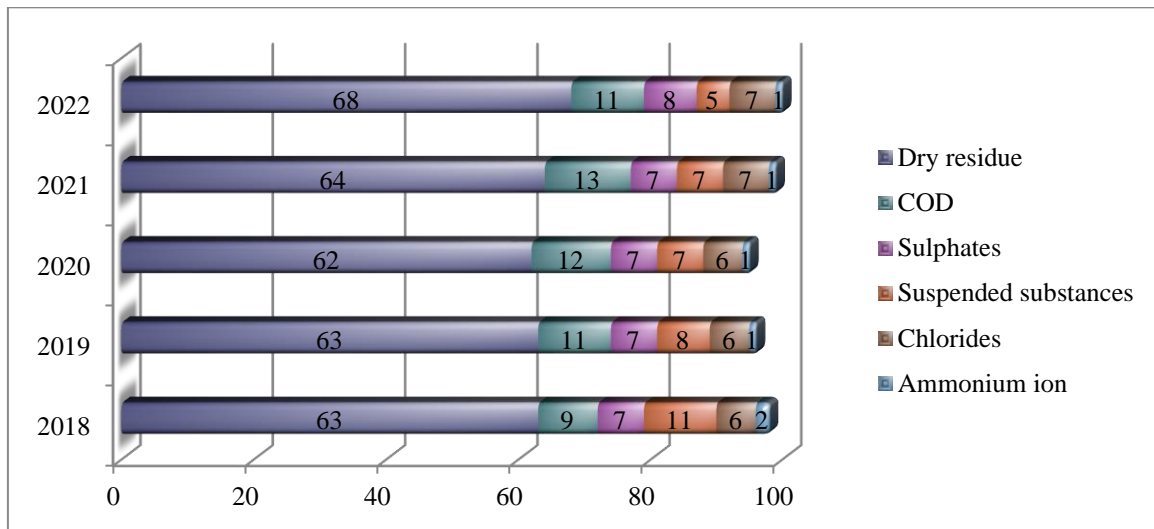


Diagram 5 shows the structure of main pollutants’ gross discharge into the domestic sewers.

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



In 2022, the largest contribution into the domestic sewer discharges was made by dry residue – up to 68%; the contribution of COD accounted for up to 11%; suspended substances – up to 5 %; sulphates – up to 8%, chlorides – up to 7%, ammonium ion – about 1%; 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%.

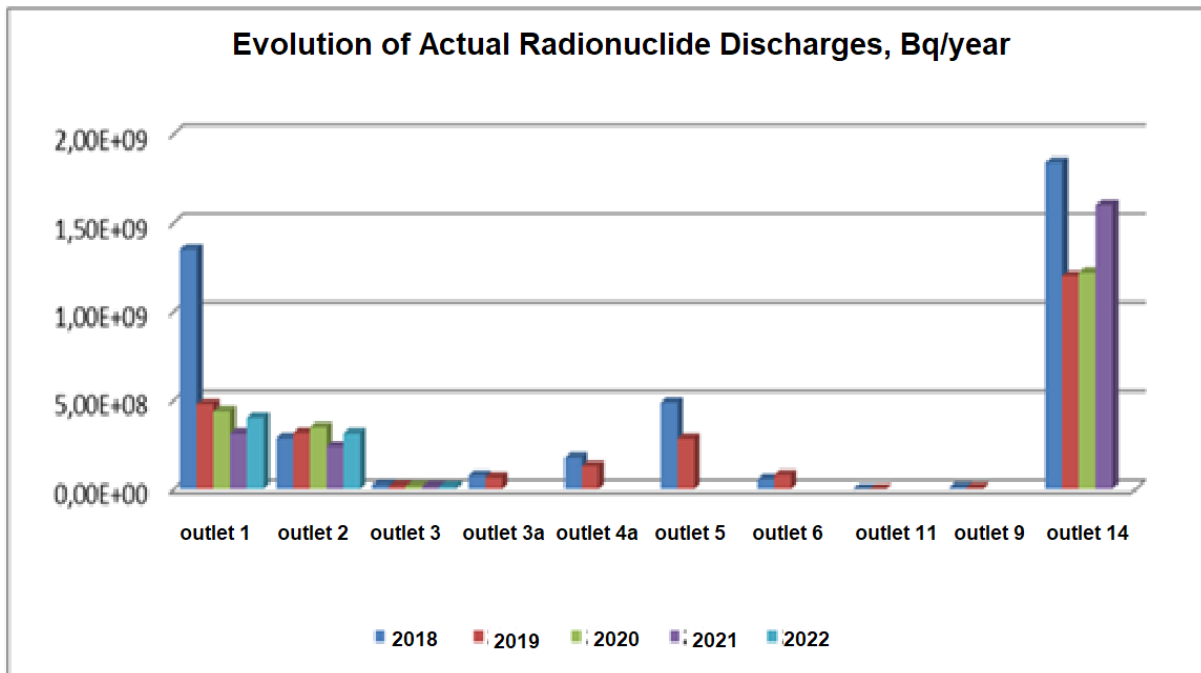
## 6.2.2. Radionuclide Discharges

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 2018 – 2022.

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 15.04.2022 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

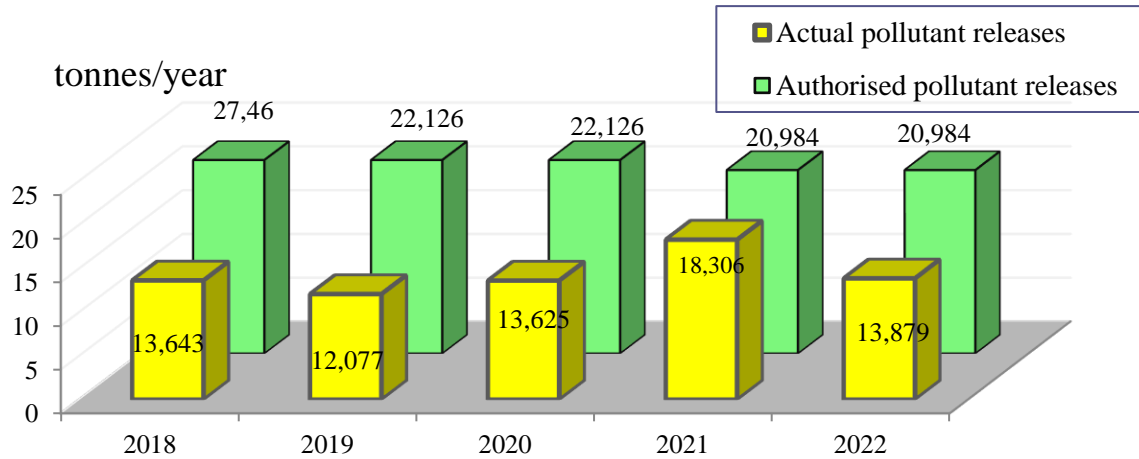
### 6.3.1. Pollutant Releases

In 2022, MSZ JSC's harmful pollutant releases into atmospheric air amounted to 13.879 tonnes, whereas the allowed quantity is 20.984 tonnes/year.

MSZ JSC has issued and submitted the Declaration of MSZ JSC's Environmental Impact, with the validity period of 7 years, to the designated authority. 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.

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 GROSS 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 2018-2022 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 2022.

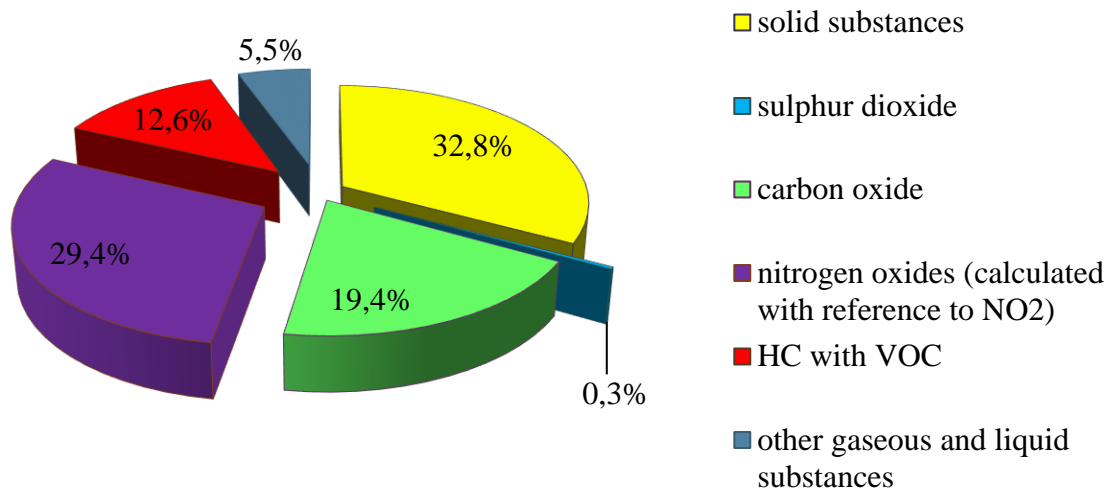
TABLE 2. DATA ON POLLUTANT RELEASES IN 2022

It. No.	Main pollutant	Hazard class	Maximum allowed release, tonnes/year	Actual release in 2022	
				tonnes / year	% of the standard rate
1	2	3	4	5	6
1	Gaseous and liquid substances (total), out of which:	-	14.091	8.204	58.2
	nitrogen oxide (calculated with reference to NO <sub>2</sub> )	3	6.162	3.875	62.9
	sulphur dioxide	3	0.052	0.037	71.2
	hydrocarbons (HC) with volatile organic compounds (VOC)	-	2.641	1.713	64.9
	carbon oxide	4	4.075	2.007	49.3
	other gaseous and liquid substances	-	1.161	0.572	49.3
2	Solid substances (total), out of which:	-	6.893	5.675	82.3
	abrasive dust	tentative safe exposure level (TSEL)	0.972	0.909	93.5
	iron oxide	3	2.121	1.504	70.9
	black carbon (soot)	3	0.077	0.016	20.8
	other solid substances	-	3.723	3.246	87.2
<b>Total</b>			<b>20.984</b>	<b>13.879</b>	<b>66.1</b>

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

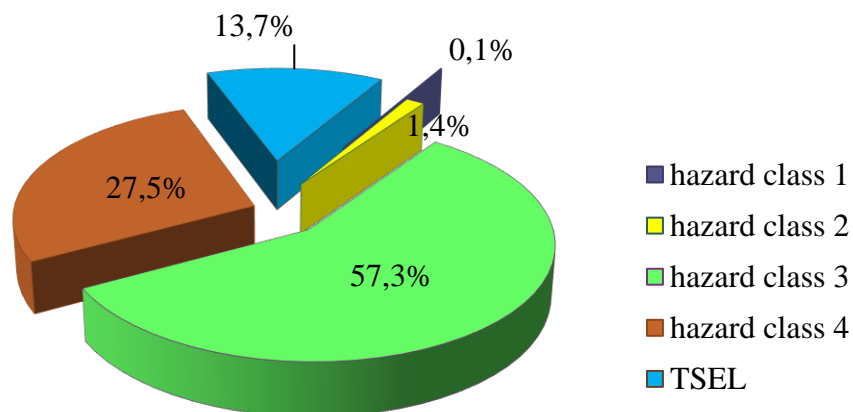


**DIAGRAM 8. COMPONENT-WISE COMPOSITION OF ACTUAL RELEASE OF HARMFUL POLLUTANTS INTO ATMOSPHERIC AIR IN 2022**



Percentage distribution of actual pollutant releases in 2022 broken down by hazard classes of environmental impact is shown in Diagram 9.

**DIAGRAM 9. POLLUTANT RELEASE DISTRIBUTION BY HAZARD CLASSES IN 2022**



In 2022, direct greenhouse gas emissions of MSZ JSC stood at 1196 tonnes CO<sub>2</sub>/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 CO<sub>2</sub>-equivalent).
- R-22 refrigerant releases in operation and refuelling of air conditioners (in CO<sub>2</sub>-equivalent);
- solvent (refrigerant 20) releases in analytical measurements.

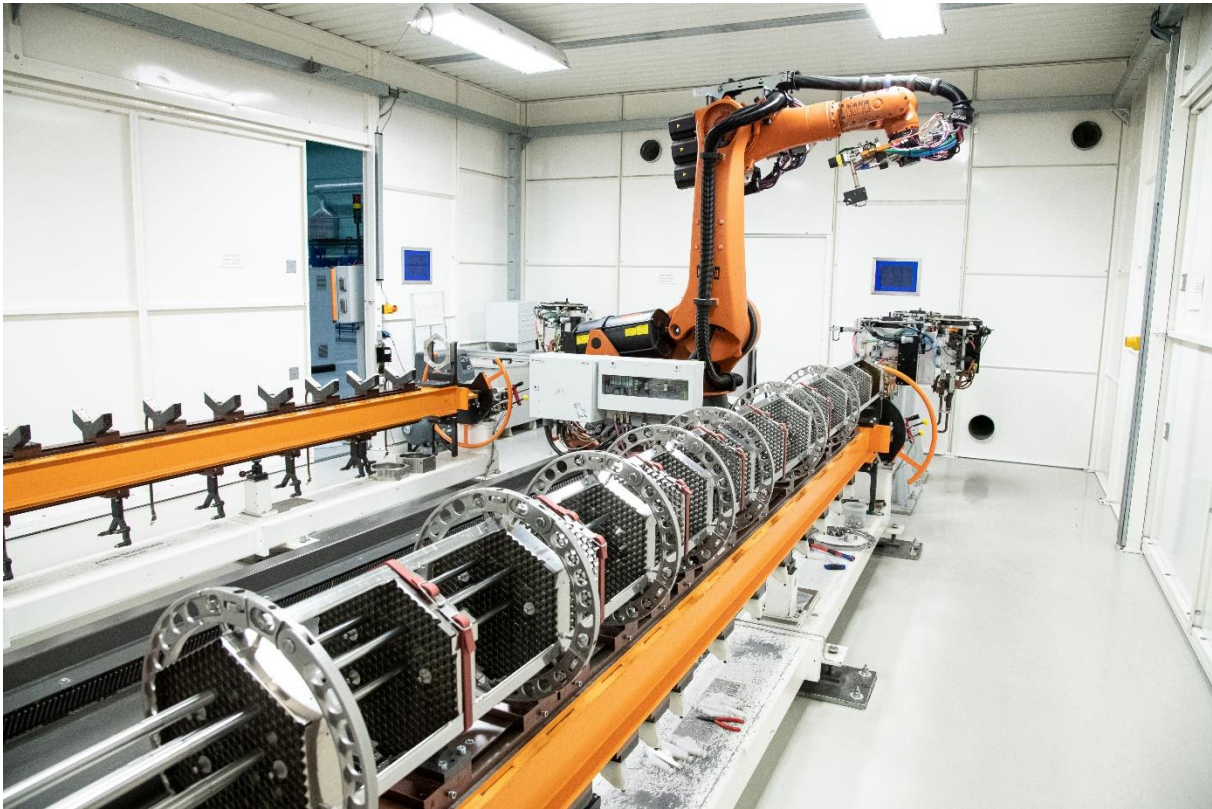
In 2022, MSZ JSC's ozone-depleting substance releases amounted to 0.01 tonnes equiv. R11/year. The company's ozone-depleting substance releases are generated by:

- R-22 refrigerant leaks in operation and refuelling of refrigerating machines (in CO<sub>2</sub>-equivalent).
- R-22 refrigerant leaks in operation and refuelling of air conditioners (in CO<sub>2</sub>-equivalent e);
- solvent (refrigerant 20) evaporation in analytical measurements.

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. For example, in 2022, in shop 48, the obsolete snagging grinding machine was dismantled together with the ventilation system and the dust settling chamber, in order to optimise the floor space. As a result of the actions taken, the annual pollutant releases into the atmosphere decreased by 0.015 tonnes.

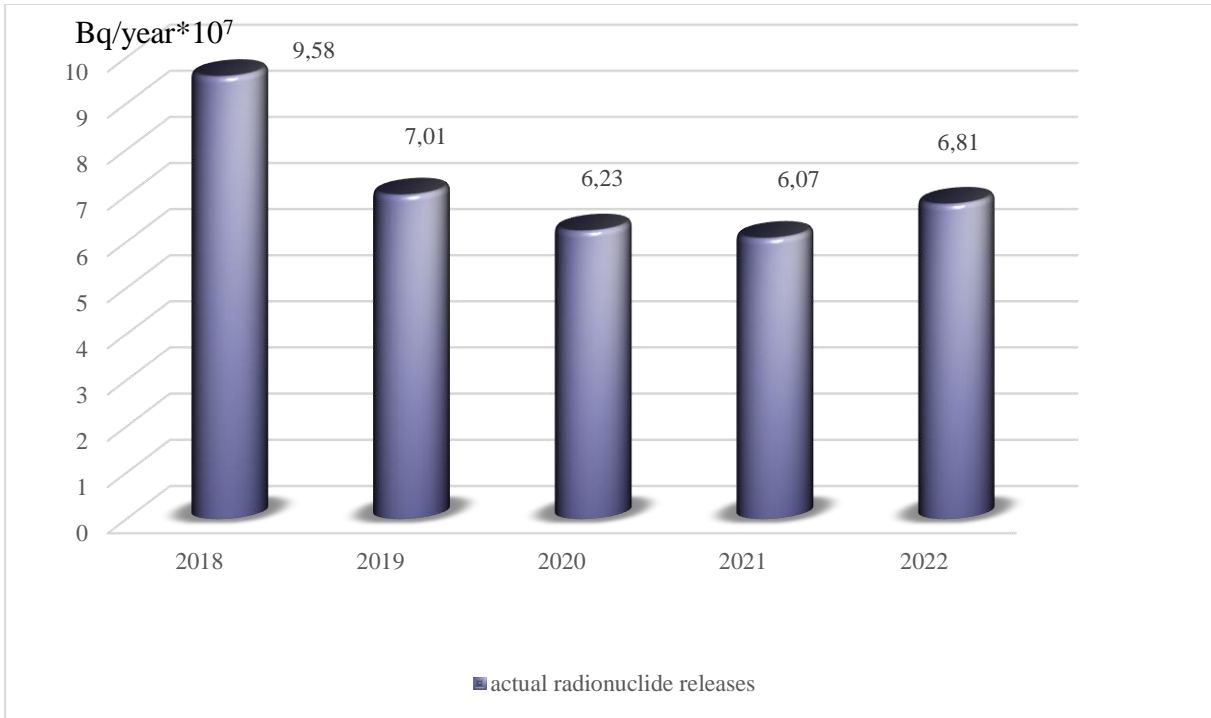


MSZ JSC continually replaces obsolete and worn special-purpose motor vehicles (lift trucks, tractors) as well as optimises their traffic routes by way of actions aimed at reducing their emissions. MSZ JSC has established monitoring sites equipped with INFRALIGHT devices to provide on-time and good quality 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. Radionuclide Releases

Long-term observations demonstrated that at MSZ JSC radionuclide releases are well below the allowed standard rates and in 2022 they amounted to  $6.81 \cdot 10^7$  Bq/year, whereas the maximum allowed radionuclide release value is  $3.24 \cdot 10^{12}$  Bq/year, specified by Authorisation for Radioactive Substance Release in the Atmosphere No. ГН-БР-0019 dated July 1, 2021, issued by the Federal Environmental, Industrial and Nuclear Supervision Service of Russia and valid through July 1, 2028.

DIAGRAM 10. EVOLUTION OF RADIONUCLIDE RELEASES IN 2018-2022 (Bq/year×10<sup>7</sup>)



Decrease in radionuclide release into the atmosphere demonstrated in 2019-2022, as compared to 2018, was related to the reduction in the runtime of the sources of radioactive substance release into the atmosphere.

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.

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 2018-2022

Radionuclide	Actual radionuclide release expressed as portions of the allowed release				
	2018	2019	2020	2021	2022
Sum total of α-radionuclides	0.00009	0.00007	0.00006	0.00002	0.00002

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.

## 6.4. Wastes

### 6.4.1. Production and Consumer Waste Management

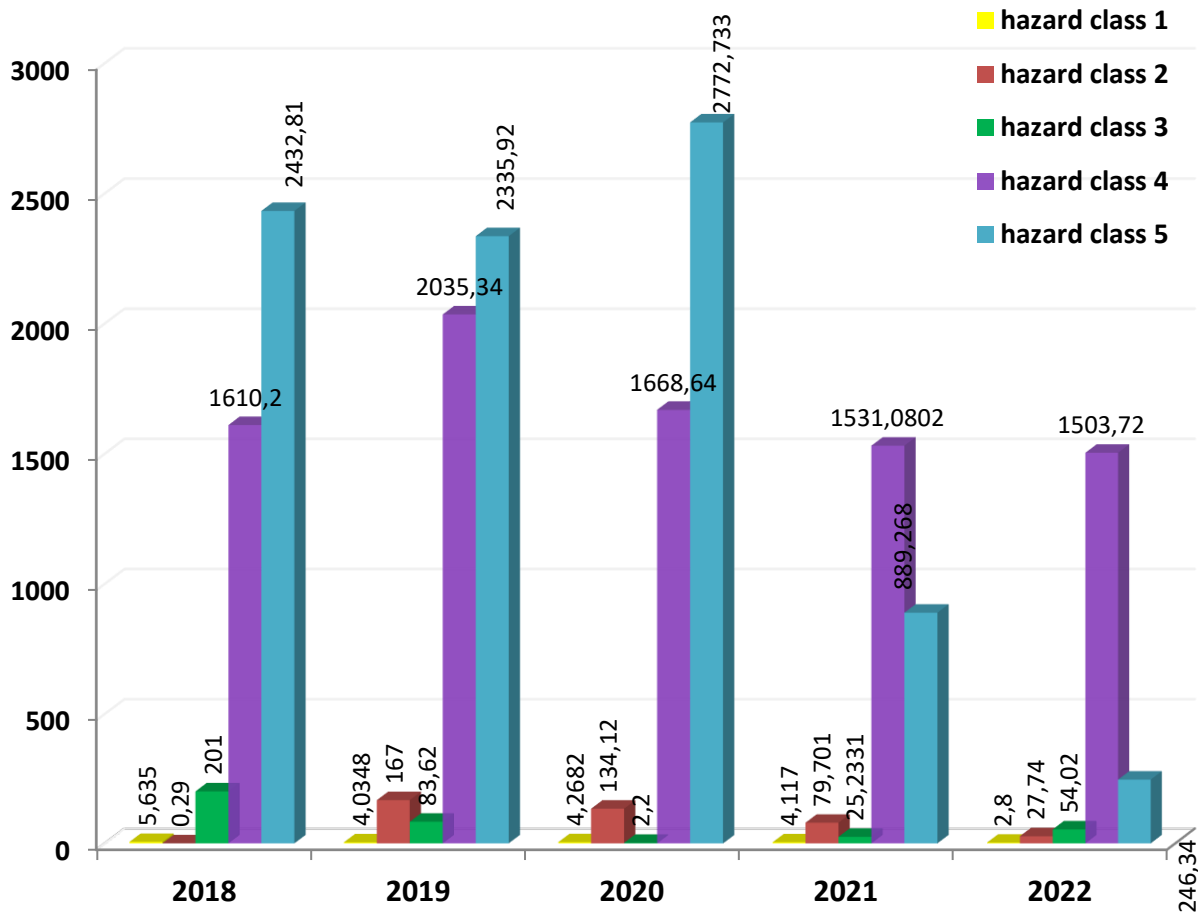
There is a functioning production and consumer waste management system in place at MSZ JSC. There is an established procedure for initial collection, accumulation and removal of waste. In order to improve the waste management system, MSZ JSC implements shop-wise accounting of generated waste and monitors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



Waste generated in 2022 amounted to 1834.605 tonnes. The significant decrease in waste in 2021-2022 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.

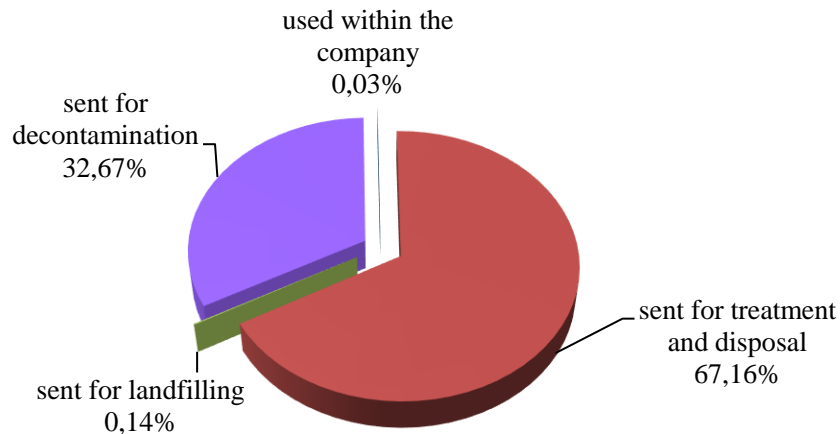
Liquid waste accounted for around 65%, solid waste – 35%. The majority of waste (95.4 %) – is the waste pertaining to hazard class 4 and 5, i.e. the least hazardous.

DIAGRAM 11. SOLID WASTE DISTRIBUTION BY HAZARD CLASSES, IN 2018-2022 (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 12. PERCENTAGE RATIO OF DISPOSED, DECONTAMINATED AND LANDFILLED WASTE IN 2022



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

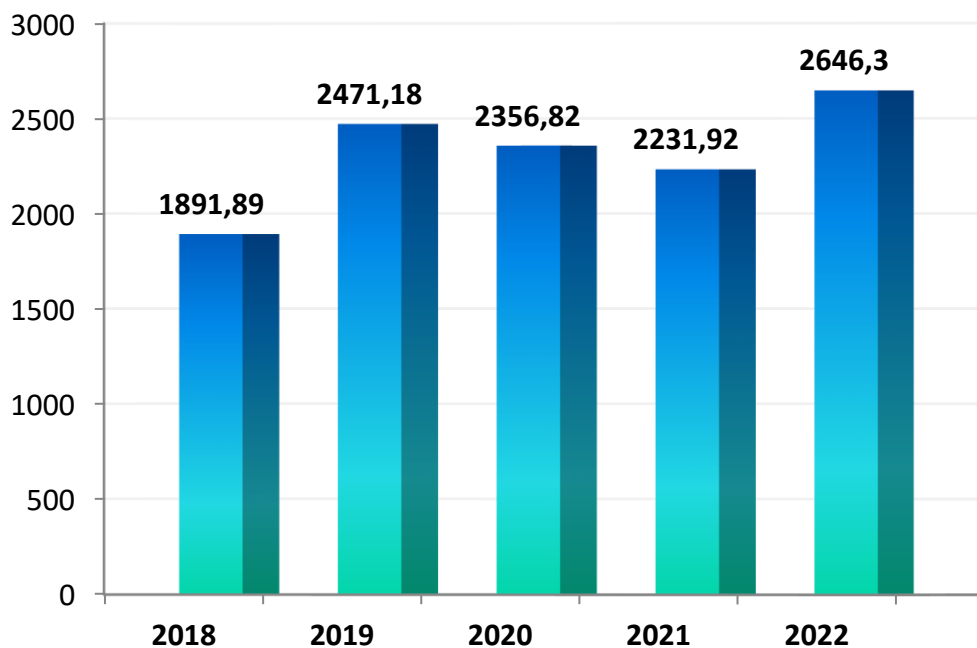
There is a system for radioactive source and RAW management in place at MSZ JSC; all the activities within the scope of RAW management are carried out based on the applicable licence issued by the Federal Environmental, Industrial and Nuclear Supervision Service of Russia.

Within the scope of RAW management activities, MSZ JSC collects, sorts, 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; services RAW 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.

RAW is collected and temporary stored in separate rooms/premises or in specially designated places, consistent 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), FSUE FEO (the Federal State Unitary Enterprise – Federal Environmental Operator), ECOMET-S JSC and

The waste generated at MSZ JSC in 2022 falls under the category of very low level radioactive waste (VLLW). In 2022, all in all, 2646.30 m<sup>3</sup> of RAW of  $1.26 \times 10^{10}$  overall activity were generated (in 2021– 223192 m<sup>3</sup>). Out of which 2556.3 m<sup>3</sup> were placed in the long-term storage facility – building 294A, and 90 m<sup>3</sup> were sent to specialised RAW management organisations.

DIAGRAM 13. VARIATION IN QUANTITY OF RAW GENERATED AT MSZ JSC IN 2018-2022



## 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 2022.



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 2022, atmospheric air contamination level in the City District of Elektrostal was assessed as low. Increased atmospheric air pollution level is determined by nitrogen dioxide content. The maximum allowable single concentration (1.3 MAC) of nitrogen dioxide was recorded at the stationary site of the national network for surveying the state of environment located on

Michurina street in the vicinity of residential building No. 2A. Year-average and maximum concentrations of remaining substances subject to be determined did not exceed the MAC. 2018-2022 demonstrated a minor increase in nitrogen dioxide concentrations, contents of other pollutants showed no substantial change.

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 2022, nitrite nitrogen content in the Moscow Region, on average, stood at 5.3 MAC; ammonium nitrogen – 2.3 MAC; nitrate nitrogen and phosphates – within the MAC limits. Ammonium nitrogen, nitrite nitrogen and phosphate contents decreased, as compared to 2021 level.



In 2022, 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 – 2.0 MAC and zinc – 5.2 MAC.

Assessment of water quality in watercourses and water reservoirs by specific combinatorial water contamination index performed in the Moscow Region in 2022 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 2022, 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

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**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.**

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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 Hidrospetsgeologia 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 2022, 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 2022, 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 2022.



In 2022, the radiation environment in the Moscow Region was calm, with no observed values higher than the allowed limits. The year-average total volumetric particulate  $\beta$ -activity amounted to  $12.9 \cdot 10^{-5}$  Bq/m<sup>3</sup>, which is by 2.4 Bq/m<sup>3</sup> lower than the previous year's level. The year-average value of the rate of the ambient equivalent of  $\gamma$ -radiation dose on the territory of the Moscow Region was within the fluctuations of natural  $\gamma$ -radiation background.

## 6.8. Energy Consumption

In 2022, energy consumption amounted to 73 690 thousand kW•h.

Reduction in energy consumption expressed in physical terms, as compared to 2020 values, amounted to 18 040 000 kW•h (24.7%).

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**REDUCTION IN ENERGY CONSUMPTION, IN COMPARABLE CONDITIONS TO THE BASELINE YEAR (2020), AMOUNTED TO 24.7%.**

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Reduction in energy consumption in 2022 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;*
- *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

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With the purpose to implement MSZ JSC's environmental policy, as per MSZ JSC's Environmental Policy Implementation Plan (No. 18/76-09/94 dated March 29, 2022) for 2022, in 2022:

- *activities related to developing of design solutions for the construction of treatment facilities at stormwater sewer outlet No. 14 were proceeded.*

IN 2022, TOTAL ENVIRONMENTAL PROTECTION-RELATED EXPENDITURE AMOUNTED TO 259 MLN ROUBLES (SEE TABLE 4).

TABLE 4. TOTAL ENVIRONMENTAL PROTECTION-RELATED EXPENDITURE

It. No.	Expenditure	Actual value for the year, thousand roubles
1	Environmental impact fee	323
2	Operating (operational) costs	112 750
3	Payments for environment conservation services	134 117
4	Overhauling costs of environmental protection-related fixed assets	3281
5	Investments in the fixed assets allocated for environmental protection and sustainable use of natural resources	8 630
	<b>Environmental protection-related expenditure, in total</b>	<b>259 101</b>

In 2022, within the structure of payments for adverse environmental impact, discharge fee accounted for 98.8%, release (emission) fee – 0.6% and production waste disposal fee – 0.6 %.



In 2023, within the scope of MSZ JSC's Environmental Policy implementation (No. 18/76-09/94 dated March 29, 2022) it is planned to proceed with the activities related to developing design solutions for the construction of treatment facilities at stormwater sewer outlet No. 14.

## 8. Environmental and Public Outreach Activities.

### Public Acceptance

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#### 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.

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**WORK IN COOPERATION AND OPENLY WITH THE RELATED LOCAL, REGIONAL AND FEDERAL PUBLIC AUTHORITIES IS THE LAW FOR MSZ JSC.**

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MSZ JSC takes an active part in the activities of the Coordination Environmental Board of the City District of Elektrostal, Moscow Region.

Within the scope of outreach activities, MSZ JSC employees held an event called “Let’s Talk about Birds” during which specialists of the Environmental Protection Department and first-grade pupils from Municipal General Education Institution – General Secondary School No. 1 (building 2) held a lesson about the birds of the Moscow Region, and then hung bird feeders that the children had prepared in advance within the school grounds.



## 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 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 2022, 20 employees of the company passed advanced training on environmental protection and safety (e.g., the following training programmes: *Hydraulic Structures at Facilities*, *ISO 14001:2015 Environmental Management*, *Vocational Training for Persons to Be Authorised in I-IV Hazard Class Waste Management*, etc.) in educational institutions.

In April, 2022, MSZ JSC employees held a voluntary clean-up day in celebration of MSZ JSC's 105<sup>th</sup> 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*). The participants cleared the perimeter of the medical sanitary department of litter, painted benches, cleaned kerb stones, removed fallen leaves, etc.

In 2022, 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 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 the VI All-Russian Water Congress 2022 and VODEXPO 2022 exhibition.

MSZ JSC employees were active participants of the All-Russian Ecology Dictation (a quiz) held on November 11-27, 2022. Online testing was available to assess one's environmental knowledge.

MSZ JSC also took part in "Gorodskiye Tsvety" (literally means "City flowers" [t/n]) – a traditional annual city festival held among enterprises and organisations of the City District of Elektrostal. In 2022, the floral exhibition was called the "Russian Cultural Heritage". MSZ JSC's creative team presented its ornamental design dedicated to the company's 105<sup>th</sup> anniversary under "Tsventik" (literary means the "Flower Garden" [t/n]) nomination, this design included such flowers as coleus (flame nettle), ageratum (floss flower), cineraria and begonia. In 2022, this festival was held for the 16<sup>th</sup> time. MSZ JSC's ornamental design was awarded with commendation of the head of the City District of Elektrostal "For active participation in amenity improving and greenery planting in the City District of Elektrostal, the Moscow Region" and won 2<sup>nd</sup> place under the "Flower Garden" nomination.

### 8.3. Public Awareness

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

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In 2022, 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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