



SCP
ROSATOM

2022

ENVIRONMENTAL REPORT

“SIBERIAN CHEMICAL PLANT” JSC

SEVERSK 2023





SCP
ROSATOM

**STATE ATOMIC ENERGY CORPORATION
“ROSATOM”
JOINT STOCK COMPANY
“SIBERIAN CHEMICAL PLANT”**

**2022
ENVIRONMENTAL REPORT
“SIBERIAN CHEMICAL PLANT” JSC**



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BACKGROUND AND CORE ACTIVITIES OF “SCP” JSC

“SCP” JSC is an enterprise within the nuclear fuel cycle; it resides in the boundaries of the Tomsk Region’s closed territory (ZATO) Seversk, which is situated on the right bank of the Tom River at about 10-12 km north of the regional center.

Historically, the Siberian Chemical Plant dates back to 1948 when an expedition of Leningrad’s special design institute GSPI-11 carried out a survey north of Tomsk, on the right bank of the Tom River, that found it feasible to construct a large nuclear complex there. The place to accommodate the construction site was decided to be the Tom’s right bank at 40-50 km upwards of the confluence of the Tom river and the Ob’ river, in the location of the Chekist settlement and the Beloborodovo and Iglakovo villages.

On March 26, 1949, the Council of Ministers of the former USSR adopted Resolution No.1252-443 as a step toward establishing near the city of Tomsk the above-mentioned group of integrated enterprises to produce highly-enriched uranium-235 and plutonium. At the outset, the Siberian Chemical Plant was designed as a unique defense complex hosting nearly all the nuclear

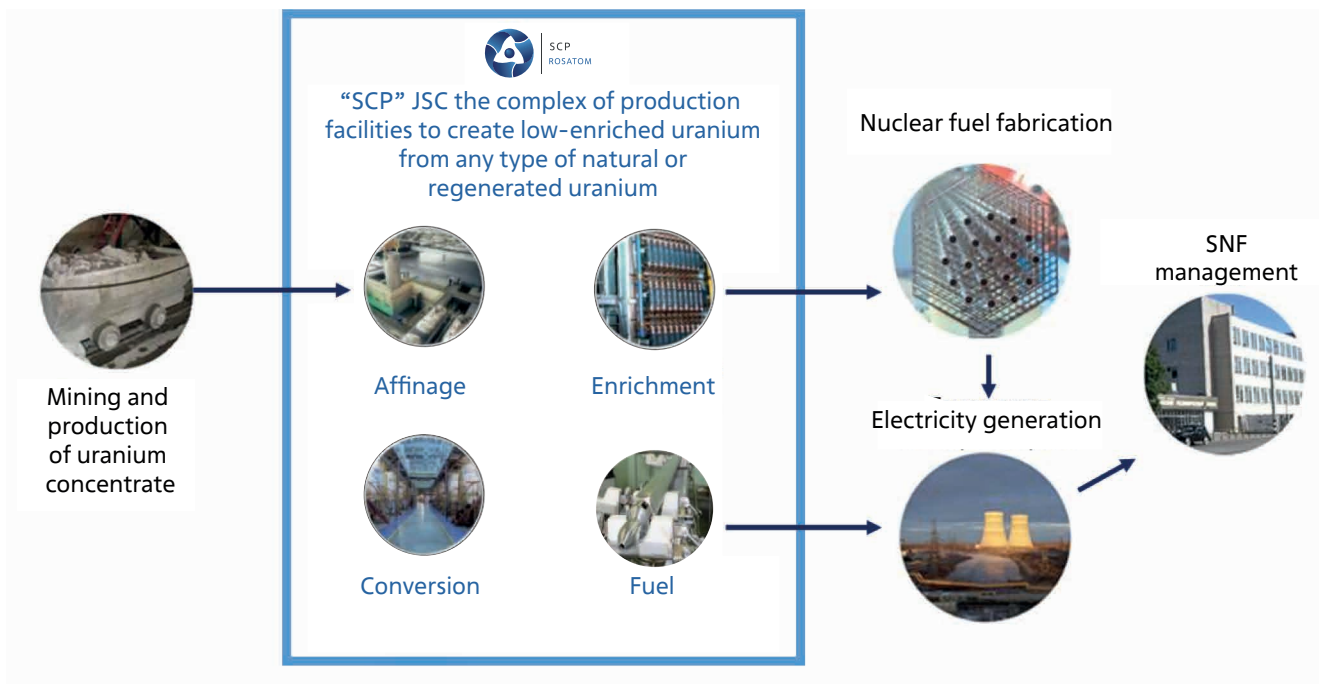
fuel cycle processes. The first plant, i.e. the Uranium Enrichment Plant, was put into operation in 1953; then the Conversion Plant and the Reactor Plant were gradually put into service in April 1954 and in November 1955 correspondingly; the year 1961 marked the commissioning of the Chemical and Metallurgical Plant and the Radiochemical Plant. The establishment of the SCP was completed in 1964 after the ADE-5 reactor had started its operation at the Reactor Plant. Concurrently with that, work was done to bring on line a co-generation plant, repair and engineering works and a number of auxiliary facilities.

With the said make-up, the Siberian Chemical Plant had been operated till early 1990s. During the period of 1990 to 1992, three production reactors were shut down at the Reactor Plant. The Reactor Plant’s remaining reactors, i.e. ADE-4 and ADE-5, were shut down in April and in June 2008.

Since 2009, the Siberian Chemical Plant has been a part of the ‘TVEL’ Fuel Company of the ROSATOM State Corporation.



FLOW CHART “SCP” JSC



SUMMARY OF PRODUCTS AND SERVICES SUPPLIED:

The production nucleus of “SCP” JSC is represented by the four plants intended to process radioactive substances and nuclear materials, i.e. the Uranium Enrichment Plant (UEP), the Conversion Plant (CP), the Radiochemical Plant (RCP), and the Chemical and Metallurgical Plant (CMP).

“SCP” JSC produces and sells the following high-technology industrial outputs:

- uranium hexafluoride for enrichment purposes (UF6);
- uranium hexafluoride enriched up to 5 % (EUP).

The scope of services rendered in the manufacture of the said products involves three principal lines to include:

1. REFINING PURIFICATION (AFFINAGE) OF URANIUM FEEDSTOCK

The related production facilities are located on the Radiochemical Plant site. Once received from customers, uranium feedstock (i.e. reprocessed uranium oxides or natural uranium as ingot metal, oxides or polyuranates), enriched in U-235 up to 1%, is dissolved and then undergoes purification from trace elements. The final output of the RCP is nitric acid uranium solution, which, after the certification process, is shipped to the Conversion Plant for further processing.





2. PRODUCTION OF URANIUM HEXAFLUORIDE FOR ENRICHMENT (CONVERSION)

These production facilities are located on the Conversion Plant site. Feed uranium hexafluoride containing U-235 less than 1 % is obtained through the high-temperature direct fluorination of uranium tetrafluoride or uranium oxides of different grades. Uranium oxides can be both provided by external suppliers and produced internally, at the CP, from uranium-bearing feedstock (uranium-containing recyclables, nitric acid U solutions coming from the RCP, and uranyl nitrate melt). The end product as feed UF₆ goes both to the Uranium Enrichment Plant of “SCP” JSC and to enrichment facilities of the separation and conversion complex of the Fuel Company to fully cover requirements of the industry.

3. PRODUCTION OF ENRICHED URANIUM HEXAFLUORIDE

The production facilities are located on Uranium Enrichment Plant site. First, feed uranium hexafluoride is converted into the gas phase; after that, it goes through the gas centrifuge cascades and, as this takes place, feed UF₆ is enriched in U-235 to reach the target assay (within 1 to 5 %). Once the target U-235 assay has been obtained, uranium hexafluoride is condensed in dedicated cylinders. In the execution of export orders, enriched uranium hexafluoride is transferred into the customer’s cylinders,

arbitration and representative samples being taken in the process. After filling, the cylinders and sample containers are placed in the interim storage facility before they are shipped to the customer.

AS PART OF THE DECOMMISSIONING

of the CMP, work is being carried out to process radioactive substances and fissile materials at the plant’s plutonium and uranium production sites. R&D work is also underway to develop the technology for manufacturing experimental fuel pellets, rods and assemblies containing nuclear materials (MNUP-fuel, REMIX-fuel, and MOX-fuel).

PERSPECTIVE ENERGY

Implementation of projects included in the State Program of the Russian Federation "Development of the Nuclear Power Industry Complex" and carried out within the Breakthrough project area:

- Construction of a fabrication module and start-up re-fabrication complex (abbreviated in Russian as MFR) of dense mixed uranium-plutonium fuel for fast neutron reactors;
- Construction of a pilot and demonstration power unit with a lead-cooled fast neutron reactor BREST-OD-300;
- Construction of a reprocessing module (abbreviated in Russian as MP) for spent nuclear fuel from fast neutron reactors.

2 ENVIRONMENTAL POLICY OF “SCP” JSC

In parallel with meeting its strategic challenges, “SCP” JSC, as an environmentally significant organization, places special emphasis on ensuring sustainable development and social responsibility. The environmental protection is a priority line of the company’s activity. In 2007, with a view to securing environmental protection and ecological safety, JSC “SCP” first developed and introduced the Environmental Policy. As environmental standards and the environmental management system were developed and enhanced, the Environmental Policy of JSC “SCP” was revised to incorporate alterations made to Environmental Policies of the ROSATOM State Corporation and “TVEL” JSC. In 2022, the Environmental Policy of JSC “SCP” was updated in view alterations made to the Unified Sectorial Environmental Policy of the ROSATOM State Corporation and Its Organizations (the updated policy was put in force by order No. 11/701-P of April 26, 2022).

THE MAIN STRATEGIC OBJECTIVES PURSUED BY “SCP” JSC IN REGARD TO ENVIRONMENTAL STEWARDSHIP INCLUDE THE ENFORCEMENT OF ENVIRONMENTAL SAFETY NEEDED TO ENSURE THE SUSTAINABLE DEVELOPMENT OF THE COMPANY, A REDUCTION OF ENVIRONMENTAL RISKS ASSOCIATED WITH THE USE OF NUCLEAR POWER AND OTHER ACTIVITIES, AND MINIMIZATION OF ADVERSE EFFECTS OF ITS PRODUCTION OPERATIONS AND OUTPUTS ON THE ENVIRONMENT TO THE MINIMAL ACCEPTABLE LEVEL.

The document states the main principles the Environmental Policy relies on, i.e.:

- recognize environmental hazards posed by ongoing and intended operations;
- ensure compliance of the SCP’s activities with the relevant environmental RF legislation in force, regulatory and other applicable requirements adopted by “SCP” JSC;
- continually improve the environmental protection and environmental safety management system through the application of performance targets and indicators of environmental efficiency, enhance the environmental performance, reduce environmental impacts and ensure rational use of natural resources at a reasonable level of costs;
- recognize a priority of actions aimed at preventing hazardous effects on the environment and personnel and public health;
- provide production facilities, both in current operation and being deployed, with processes and techniques of environmental state monitoring and control that allow for achieving and maintaining the appropriate level of environmental safety in line with the up-to-date requirements;

- apply risk-oriented approach so as to make environmentally effective management decisions;
- combine environmental, economic and social interests of “SCP” JSC and the population, governmental and local authorities of ZATO Seversk, public organizations for the sake of ensuring sustainable development, favorable environment and environmental safety;
- ensure constant readiness of the executive and staff personnel for preventing, containing and responding efficiently to potential human-induced accidents, associated with the use of nuclear power, and other emergencies;
- make the executive and staff personnel responsible for any damage to the environment and personnel and public health;
- ensure availability and transparency of environmental information, and establish effective relations with interested parties.

THE EMPLOYEES OF “SCP” JSC UNDERTAKE A COMMITMENT TO ENSURE THE IMPLEMENTATION OF THE ENVIRONMENTAL POLICY.





СХК
РОСАТОМ

ЭКОЛОГИЧЕСКАЯ ПОЛИТИКА АО «СХК»

Акционерное общество «Сибирский химический комбинат» является предприятием Государственной корпорации по атомной энергии «Росатом», входит в контур дочерних обществ Топливной компании ТВЭЛ и представляет собой комплекс производства ядерно-топливного цикла. АО «СХК» оказывает услуги по обогащению, конверсии и очистке (аффинажу) уранового сырья, обеспечивает выполнение задач по созданию опытно-демонстрационного энергокомплекса и отработке новых ядерных технологий в рамках проектного направления «Прорыв», осуществляет производство продукции общепромышленного назначения, а также вывод из эксплуатации и поддержание в безопасном состоянии объектов ядерного наследия.

АО «СХК» осознает, что комплекс технологических процессов, обеспечивающих производство продукции на всех этапах жизненного цикла, включая использование в них ядерных, радиоактивных материалов и других опасных веществ, не должен приводить к негативным изменениям в окружающей среде и отрицательно влиять на здоровье персонала и населения.

Главными стратегическими целями АО «СХК» в области экологии и охраны окружающей среды являются: обеспечение экологической безопасности, необходимой для устойчивого развития АО «СХК»; снижение экологических рисков, связанных с использованием атомной энергии и иных видов деятельности; сокращение негативного воздействия производства и поставляемой продукции на окружающую среду до минимально приемлемого уровня.

Реализация экологической политики АО «СХК» осуществляется в соответствии со следующими ключевыми принципами:

- признания экологической опасности планируемой и осуществляемой деятельности;
- обеспечения соответствия деятельности АО «СХК» российскому природоохранному законодательству, нормативным и другим требованиям, принятым АО «СХК»;
- постоянного совершенствования системы управления охраной окружающей среды и экологической безопасностью посредством применения целевых показателей и индикаторов экологической эффективности, улучшения показателей результативности природоохранной деятельности, снижения негативного воздействия на окружающую среду и рационального использования природных ресурсов при обоснованном уровне затрат;
- приоритета действий, направленных на предупреждение негативного воздействия на окружающую среду, здоровье персонала и населения;
- применения на действующих и вводимых производствах технологических процессов, методов контроля и мониторинга состояния окружающей среды, обеспечивающих достижение и поддержание экологической безопасности на уровне, отвечающем современным требованиям;
- применения риск-ориентированного подхода в целях принятия экологически эффективных управленческих решений;
- сочетания экологических, экономических и социальных интересов АО «СХК» и населения, органов государственной власти и органов местного самоуправления ЗАТО Северск, общественных организаций в интересах устойчивого развития и обеспечения благоприятной окружающей среды и экологической безопасности;
- постоянной готовности руководства и работников АО «СХК» к предотвращению, локализации и ликвидации последствий возможных техногенных аварий при использовании атомной энергии и иных чрезвычайных ситуаций;
- ответственности руководства и персонала за нанесение вреда окружающей среде, здоровью персонала и населения;
- открытости и доступности экологической информации, конструктивного взаимодействия с заинтересованными сторонами.

Основные направления экологической политики АО «СХК»:

- обеспечение результативного функционирования и постоянного улучшения интегрированной системы менеджмента качества, экологии, охраны здоровья и безопасности труда, энергоресурсов, безопасности цепи поставок АО «СХК» в соответствии с требованиями ISO 9001, ISO 14001, ISO 50001, ISO 45001, ISO 28001;
- разработка и внедрение конструкций изделий, технологий, оборудования, применение материалов, направленных на рациональное природопользование, снижение негативного воздействия на окружающую среду, сохранение здоровья персонала и населения;
- развитие радиозэкологического мониторинга состояния окружающей среды, совершенствование нормативного обеспечения в области охраны окружающей среды и экологической безопасности при использовании атомной энергии;
- повышение результативности обеспечения экологической безопасности, обеспечение безопасного обращения с радиоактивными отходами, отходами производства и потребления;
- обеспечение деятельности по охране окружающей среды и экологической безопасности необходимыми ресурсами, включая кадры, финансы, технологии, оборудование и рабочее время;
- осуществление мероприятий, направленных на решение ранее накопленных экологических проблем;
- обеспечение необходимого уровня готовности сил и средств для предотвращения и ликвидации последствий происшествий, инцидентов, аварий и иных чрезвычайных ситуаций в области экологии;
- повышение уровня экологического образования и экологической культуры работников АО «СХК», экологического просвещения населения;
- применение современных методов комплексного анализа экологических рисков и возможностей для управления экологической безопасностью действующих производств и для принятия решений об осуществлении планируемой деятельности.

Работники АО «СХК» принимают на себя обязательство обеспечить реализацию экологической политики.

Генеральный директор АО «СХК»

С. А. Котов

2022

3 ENVIRONMENTAL MANAGEMENT, QUALITY MANAGEMENT, OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT, AND ENERGY MANAGEMENT SYSTEMS. INTEGRATED MANAGEMENT SYSTEM.

“SCP” JSC regards the development of management systems as one of top corporate priorities and a key determinant of its sustainable development.

The implementation of management systems started in 2004 with a quality management system. In 2010, an environmental management system was implemented and certified. Since 2015, the Integrated Management System (IMS) of “SCP” JSC has been combining four systems: ISO 9001: 2015, ISO 14001:2015, OHSAS 18001:2007 and ISO 50001: 2011 and has been part of the IMS of “TVEL” JSC.

In 2021, the certification body Intercertifica-TUV LLC conducted a recertification audit of the IMS for compliance with the requirements of ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, and ISO 50001:2018. The audit resulted in certificates TIC 15 100 52672/6, TIC 15 104 10699/6, TIC 15 118 20242/6, and TIC 15 275 14075/6 valid until August 27, 2024.

In 2022, “SCP” JSC implemented a supply chain security management system that meets the requirements of ISO 28000:2007 “Supply Chain Security Management Systems. Specifications” and GOST R ISO 28000-2019 “Specifications for Supply Chain Security Management Systems”. Representatives of certifying authority TÜV Thüringen e.V conducted a witness audit of the SCP’s IMS that incorporates the QMS, the EMS, the OH&SMS, the Energy Management System, and the Supply Chain Security System and constitutes a part of the “TVEL” Fuel Company’s ISM. The audit results attested to compliance of the SCP’s IMS with the requirements of the relevant international standards.



4 PRINCIPAL DOCUMENTS GOVERNING ENVIRONMENTAL ACTIVITIES OF “SCP” JSC

THE SCP’S ACTIVITIES THAT AIM AT ENSURING THE ENVIRONMENTAL SAFETY ARE GOVERNED BY:

• Russian Federation acts of legislation, i.e.:

- Federal Law No. 3-FZ of January 09, 1996 “On Public Radiation Safety”;
 - Federal Law No.7-FZ of January 10, 2002 “On Environmental Protection”;
 - Federal Law No. 52-FZ of March 03, 1999 “On Sanitary and Epidemiological Well-Being of the Population”;
 - Federal Law No. 89-FZ of June 24, 1998 “On Industrial and Consumer Waste”;
 - Federal Law No. 96-FZ of May 04, 1999 “On Protection of the Atmospheric Air”;
 - Federal Law No. 116-FZ of July 21, 1997 “On Industrial Safety of Hazardous Production Sites”;
 - Federal Law No.170-FZ of November 21, 1995 “On Use of Nuclear Energy”;
 - Federal Law No. 2395-1 of February 21, 1992 “On the Subsoil”;
 - the Water Code of the Russian Federation” No.74-FZ of June 03, 2006;
 - the Land Code of the Russian Federation No. 136-FZ of October 25, 2001;
- and other legislative acts of the Russian Federation.

• Resolutions of the RF Government as follows:

- RF Government Resolution No. 2055 dated December 09, 2020 “On Maximum Permissible Emissions, Temporarily Permitted Emissions, Maximum Permissible Standards for Harmful Physical Effects on the Atmospheric Air and Permits for Emissions of Pollutants into the Atmospheric Air”;
- RF Government Resolution No. 255 dated March 03, 2017 “On Calculation and Levying of Pollution Charges” (including the Rules for Calculation and Levying of Pollution Charges);
- RF Government Resolution No. 280 dated March 29, 2013 “On Licensing Activities in the field of Atomic Energy Use”;
- RF Government Resolution No. 373 dated April 21, 2000 “On Approval of the Provision on State Record-Keeping of Adverse Impacts on the Atmospheric Air and Related Sources”;
- RF Government Resolution No. 421 dated June 06, 2002 “On Approval of Regulations Governing the Development of Special Environmental Programs for Remediation of Contaminated Lands”;
- RF Government Resolution No. 1096 dated June 30, 2021 “On Federal State Environmental Control (Supervision)” (including the Provision on Federal State Environmental Control (Supervision));
- RF Government Resolution No. 542 dated June 15,

2016 “On Procedure for State Control and Accounting of Radioactive Substances and Radioactive Waste”;

- RF Government Regulation No. 639 dated July 10, 2014 “On State Monitoring of Radiation Environment in the Russian Federation”;
- RF Government Resolution No. 794 dated December 30, 2003 “On the Unified State System for Prevention and Elimination of Emergency Situations”;
- RF Government Resolution No. 2290 dated December 26, 2020 “On Licensing Activities for the Collection, Transportation, Processing, Management, Decontamination, Disposal of Waste of I-IV Hazard Classes”;
- RF Government Resolution No. 2398 dated December 31, 2020 “On approval of the Criteria for Classifying Objects That Have a Negative Impact on the Environment to Objects of Categories I, II, III and IV”, and other related resolutions of the RF Government:
- SanPiN 2.6.1.2523-09 Radiation Safety Standards (NRB-99/2009);
- SP 2.6.1.2612-10 Basic Sanitary Rules for Radiation Safety Assurance (OSPORB 99/2010)/

- Guideline documents of GosSanEpidNadzor (RF Oversight Committee for Sanitation and Epidemiology), RosTechNadzor (RF Service for Environmental, Technological and Nuclear Oversight), RosPrirodNadzor (RF Agency for Oversight of Natural Resource Usage), the ROSATOM State Corporation and JSC “TVEL”.

IN ADDITION, “SCP” JSC ADHERES TO ITS SELF-IMPOSED COMMITMENTS STATED IN A NUMBER OF CORPORATE DOCUMENTS, INCLUDING THE FOLLOWING:

- Unified Sectoral Environmental Policy of the ROSATOM State Corporation and its Organizations;
- Statement of Safety Culture Policy of the ROSATOM State Corporation;
- Unified Sectoral Social Policy of ROSATOM and its Organizations;
- Unified Sectoral Policy of ROSATOM and its Organizations in the Field of Sustainable Development;
- Technical Policy of the Fuel Division of the ROSATOM State Corporation;
- Unified Information Policy of “TVEL” JSC and the Companies Operated by the Fuel Company;
- Policy of “TVEL” JSC in the Field of Safety Culture Development and Enhancement;
- Strategy of “TVEL” JSC in the Field of Safety Culture Development and Enhancement;

- Mission of the Siberian Chemical Plant;
- Quality Assurance Policy of “SCP” JSC;
- Environmental Policy of “SCP” JSC;
- Energy Policy of “SCP” JSC;
- Occupational Health and Safety Policy of “SCP” JSC;
- Supply Chain Security Policy of “SCP” JSC;
- Fire Safety Policy of “SCP” JSC;
- Safety Assurance Policy of “SCP” JSC;
- Standards of “SCP” JSC related to the environment protection;

Standards of “SCP” JSC related to the Integrated Management System.

Environmental activities of “SCP” JSC in 2022 were regulated by the following licenses and permits issued by the relevant supervisory bodies:

- Radioactive Waste Management License No. GN-(U)-07-304-3976 dated December 28, 2020 (valid until December 28, 2025);
- License for Handling Radioactive Materials during Transportation GN-06-501-3450 dated December 07, 2017 (valid until December 07, 2022), GN-06-501-4261 dated July 15, 2022 (valid until July 15, 2027);
- License for Handling Nuclear Materials during Transportation GN-05-401-3745 dated December 12, 2019 (valid until December 12, 2024);
- License for Handling Radioactive Waste during Storage, Processing, during the Performance of Work and the Provision of Services SDV-(U)-07-602-2853 dated September 02, 2021 (valid until September 02, 2026);
- License for the Right to Operate the Storage Area for Radioactive Waste – fixed facilities and constructions dedicated to store radioactive waste – pools P-1 and P-2 located on site No. 18a GN-03-303-3326 dated February 03, 2017 (valid until February 03, 2022), GN-03-303-4195 dated February 03, 2022 (valid until February 03, 2027);
- License for Activities Using Ionizing Radiation (Generating) Sources No. 70.TS.08.002.L.000009.03.11 dated March 23, 2011 (non-expiring);
- License for the Right to Operate Radiation Sources No. SDV-03-206-2486 dated September 11, 2017 (valid until September 11, 2022), SDV-(U)-03-205-2948 dated September 12, 2022 (valid until September 11, 2027);
- Document of approval of waste generation norms and waste disposal limits No. 0007-19 of January 29, 2019 (valid until January 29, 2024);
- Permit for Air Emissions of Radioactive (Polluting) Substances No. 0020-18 dated June 27, 2018. Valid from June 27, 2018 till June 26, 2025;
- Environmental impact declarations:
 - No. 11-26/7226-UFD dated December 31, 2020. Valid from December 31, 2020 till December 31, 2027;
 - No. 11-26/7244- UFD dated December 31, 2020. Valid from December 31, 2020 till December 31, 2027;
 - No. 11-26/7231- UFD dated December 31, 2020. Valid from December 31, 2020 till December 31, 2027;
 - No. 11-26/4167 - UFD dated June 09, 2021. Valid from December 31, 2020 till December 31, 2027;

- Permit for air emissions of radioactive substances No. GN VR-0020 dated July 12, 2021 (valid from August 01, 2021 till no August 01, 2028);
- Permits for water discharge of radioactive substances:
 - No. 7 dated December 29, 1994 (valid until March 01, 2022);
 - No. GN-SR-0032 dated February 18, 2022 (valid from March 01, 2022 till March 01, 2029);
- Permit for water discharge of substances (excluding radioactive substances) and microorganisms for the “Severn” outlet No. 0003-21 dated May 11, 2021 (valid from May 11, 2021 till May 10, 2024);
- Decision granting the use of a water body (a stretch of the Tom River stretch) for the ‘Severn’ outlet of effluents No. 70-13.01.03.004-R-RSVKH-S-2020-03217/00 dated September 22, 2020 (valid until August 18, 2025);
- Water Use Agreement for the Tom stretch with the aim of withdrawing water resources No. 70-13.01.03.004-R-DZVKH-S-2019-02979/00 dated January 21, 2019 (valid from January 21, 2019 till December 31, 2023);
- Certificates of state registration of environmentally hazardous facilities owned by “SCP” JSC:
 - Facility code No. 69-0170-001380-T. Category of the facility of negative impact on the environment (NVOS) – I. Facility name: “Severn” outlet of effluents of “SCP” JSC;
 - Facility code No. 69-0154-002709-P. Facility category: NVOS – II. Facility name: Production site No. 1;
 - Facility code No. 69-0154-002711-P. Facility category: NVOS – II. Facility name: Production site No. 3;
 - Facility code No. 69-0154-002710-P. Facility category: NVOS – II. Facility name: Production site No. 5;
 - Facility code No. 69-0154-002712-P. Facility category: NVOS – II. Facility name: Production site No. 9;
 - Facility code No. 69-0170-001312-P. Facility category: NVOS – II. Facility name: industrial water supply section, motorway 11/12;
 - Facility code No. 69-0170-001313-P. Facility category: NVOS – II. Facility name: motorway 12/6;
 - Facility code No. 69-0170-001314-P. Facility category: NVOS – II. Facility name: industrial water supply section, onshore pumping station No. 1;
 - Facility code No. 69-0170-001315-P. Facility category: NVOS – II. Facility name: industrial water supply section, onshore pumping station No. 2;
 - Facility code No. 69-0154-002725-P. Facility category: NVOS – IV. Facility name: Production site No. 8

5 INDUSTRIAL ENVIRONMENTAL CONTROL AND MONITORING

5.1 INDUSTRIAL ENVIRONMENTAL CONTROL AT “SCP” JSC

The industrial environmental control in place at “SCP” JSC primarily seeks to ensure that the company’s production operations, which have an impact on the environment, keep within the established standards and meet the requirements stated in the relative environmental legislation and other applicable regulations in force.

The industrial environmental control includes control of emissions and effluents by “SCP” JSC and control of its generated waste, i.e.:

- control of harmful chemicals at the sources of atmospheric emissions located in the company’s subdivisions;
- control of harmful chemical in effluent waters discharged by subdivisions individually and in total for the company;
- control over the generation and related disposal limits of non-radioactive waste, and the observance of established procedures for managing such waste.

The scope and frequency of control is specified in the relative regulatory documents, standards of organization, and it is exercised in accordance with respective schedules which are developed yearly. The results of control are properly documented.

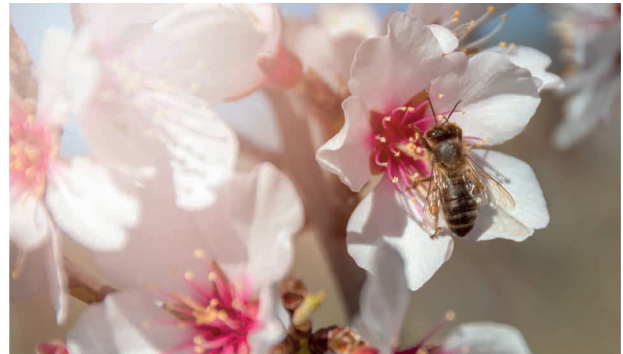


5.2 ENVIRONMENTAL MONITORING

Radiation and sanitary surveillance of natural environments is carried out in the buffer area (BA) and in the observation area (OA) of the Siberian Chemical Plant. Dimensionally, the BA of “SCP” JSC is 112 km², its perimeter spread is 50 km, and the OA of “SCP” JSC is 519 km², its perimeter spread is 94.1 km.

Environmental monitoring includes:

- control of harmful chemical and radioactive substances in the surface air at fixed monitoring stations fitted with dedicated filter-ventilator equipment that enables the continuous air sampling;
- control of harmful chemical and radioactive substances in the withdrawn river water, effluents of “SCP” JSC and in the Tom water downstream of the SCP’s wastewater outlet;
- computer-aided control of gamma-radiation intensity and meteorological parameters of the environment using the Automated Radiation Environment Monitoring System (hereinafter referred to as the AREMS) in the BA and OA of “SCP” JSC that systematically communicates the obtained data to the private institution for information and analytical support “Crisis Management Center of ROSATOM”;
- control of radioactive substances in environmental objects (e.g. soil, vegetation, snow) in the SCP’s BA (7 monitoring stations), in the OA (two monitoring stations in Seversk and 13 stations scattered within 15-30 km away from the SCP), as well as at the background monitoring station located in the village of Pobeda;

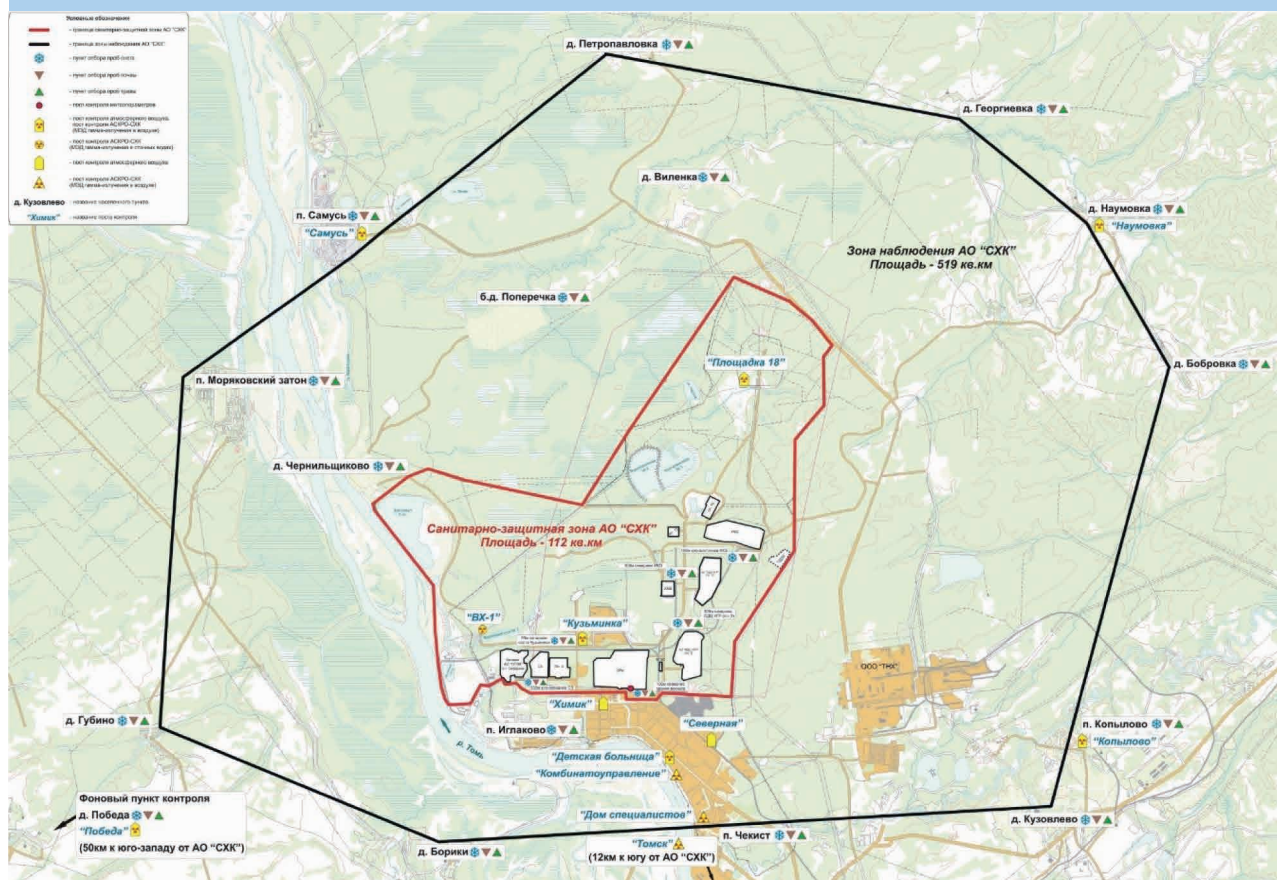


- control of harmful chemical and radioactive substances in water and bottom silt of surface-water bodies (the Tom, inland and floodplain lakes);
- radiation control of the SCP’s buffer area as well as Seversk, Tomsk and other settlements located in the observation area of “SCP” JSC.

Environmental monitoring is exercised by three laboratories of “SCP” JSC accredited in their national system by the Federal Accreditation Service (accreditation certificates: ROSS RU.0001.21A106 (Central Laboratory of the SCP); RA.RU.21AD39 (Radiation Safety Department); RA.RU.21HM11 (Radiation Industrial and Sanitation Laboratory of the Environmental Control Department (ECD)).

The scope and frequency of control is specified in the relative regulatory documents, standards of organization, and it is exercised in accordance with respective schedules which are developed yearly. The results of control are properly documented.

SCHEME OF RADIATION AND SANITARY CONTROL OF THE TERRITORY



INFORMATION ANALYSIS SYSTEM OF RADIOECOLOGICAL MONITORING

Since 2017, “SCP” JSC has been routinely operating the information analysis system of radioecological monitoring (IAS REM). The said system provides for the acquisition, archiving and analysis of all the information related to production control and environmental monitoring of the SCP as a whole and of its subdivisions individually as regards all the environmental components and engineering facilities that can influence conditions for the propagation of pollution indicators.

The IAS REM is intended to systematize and provide a facility- and industry-wide presentation of environmental information. The use of the system enables management authorities to receive environmental data on a more expeditious and credible basis that allows for taking more informed and justified decisions on protection of the environment.

Since placed in service, the SCP’s IAS REM has been upgraded by the developer, with due account for updated requirements of relevant environmental legislation in force.

SUBSURFACE MONITORING

The Facility-Level Subsurface Monitoring (FLSM) on production sites and in the buffer area of JSC “SCP” is carried out by the company’s geotechnological monitoring laboratory of the environmental control department (ECD) in keeping with the established FLSM program.

The said monitoring represents a system of routine observations, gathering, accumulation, processing and analysis of information, evaluation and forecast of subsurface changes in the upper part of the active water exchange zone influenced by surface facilities that pose nuclear and radiation hazards. The subsurface monitoring of the SCP’s site and protective sanitary zones of Seversk intakes employs hydrodynamic, hydrogeochemical, and geophysical types of monitoring using a total of 223 routine monitoring stations.

From the findings of the 2022 monitoring, it can be concluded that:

- there were no recognized human-induced impacts on underground waters to exceed the permissible content of chemical components and radionuclides, as against preceding years, in locations of the SCP’s radiation-hazardous facilities;
- areally, the regions that feature technology-induced changes in their underground waters are not wide-spread, and they lay within the confines of the production sites;
- there was no detectable chemical and radiation contamination of the Eocene-Oligocene aquifer system’s underground waters used for portable water supply and service purposes.

Based on the 2022 monitoring results, a report was prepared for ROSATOM’s Subsurface Monitoring Center to provide information on the hydrodynamic and temperature conditions of underground waters as well as the data obtained in chemical and radiochemical analyses of underground water samples.





ENVIRONMENTAL IMPACT

6.1 WITHDRAWAL FROM WATER SOURCES

“SCP” JSC is a major consumer of fresh water in the Tomsk Region. The water body that serves as a source of water supply is the Tom River. The Siberian Chemical Plant takes in water from the Tom using two pumping stations BNS-1 and BNS-2, situated on the Tom’s right bank at 53.5 and 52.5 km of the mouth.

During YY 2018–2022, withdrawals of river water for the SCP’s production needs did not exceed annual water consumption limits set by the relevant regulating authorities. Diagram 1 and Table 1 show the actual size of water consumption.

Diagram 1. Water consumption limits and SCP’s actual water consumption in YY 2018–2022

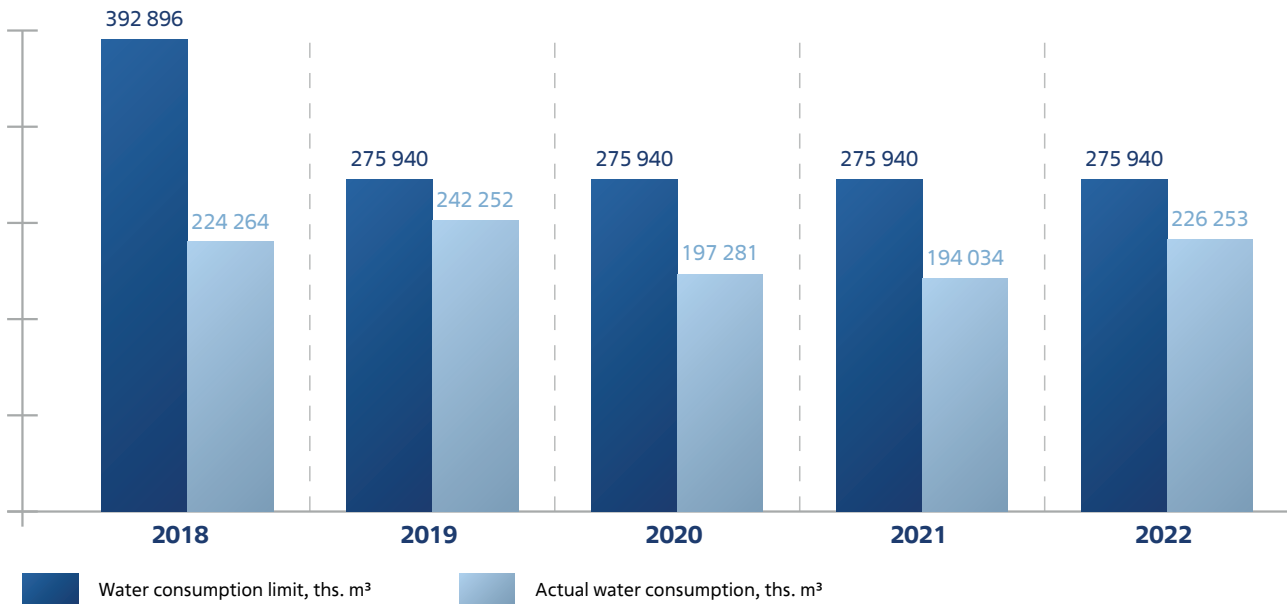


Table 1. Limits and consumption by the SCP from the Tom river during YY 2018–2022

Year	Consumption limit, ths. m³	Actual consumption, ths. m³	% of consumption limit
2018	392 896	224 264	57.0
2019	275 940	242 252	87.8
2020	275 940	197 281	71.5
2021	275 940	194 034	70.3
2022	275 940	226 253	82.0

To cool down process equipment of the SCP’s Conversion Plant during the warm weather period, use is made of artesian water from the ground wells located on the plant site. Water consumption limits and actual withdrawals of water from the wells on the Conversion Plant site are shown in Diagram 2 and Table 2.

Diagram 2. Consumption Limits and Actual Withdrawals from CP wells during YY 2018–2022

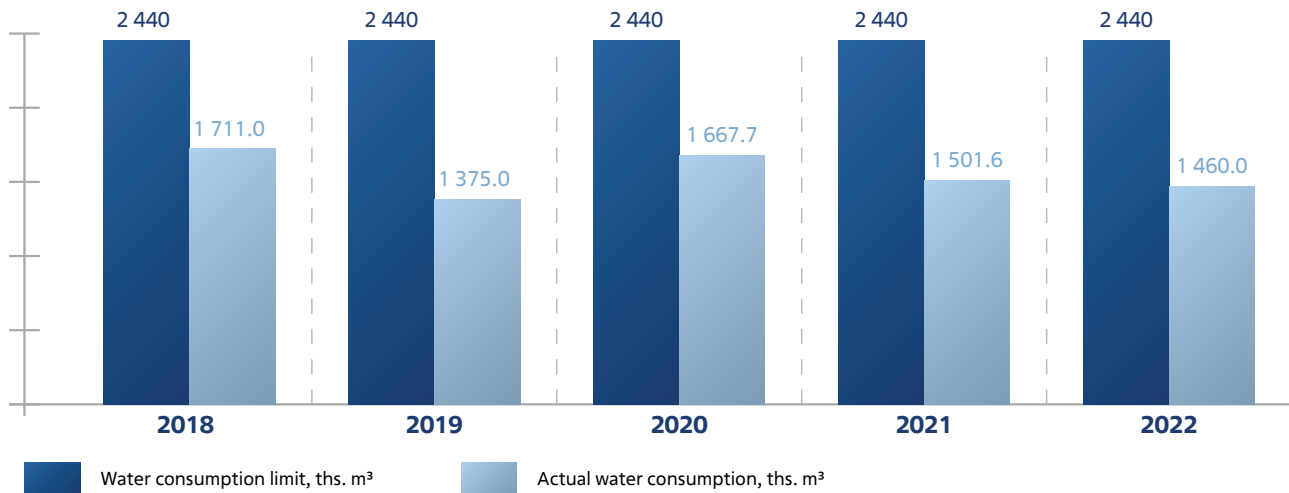


Table 2. Water consumption limits and actual withdrawals from CP wells during YY 2018–2022

Year	Consumption limit, ths. m³	Actual consumption, ths. m³	% of consumption limit
2018	2400	1711.0	70.1
2019	2400	1375.4	56.4
2020	2400	1667.7	68.3
2021	2400	1501.6	61.5
2022	2400	1460.0	59.8

The Siberian Chemical Combine possesses technologies for the multiple (recycling) use of river water. The recycling of water is effected in the water supply scheme of the Radiochemical Plant (RCP). Diagram 3 and Table 3 provide data on volumes of multiply used water over the period of 2018–2022.

Diagram 3. Volume of multiply used water in YY 2018–2022

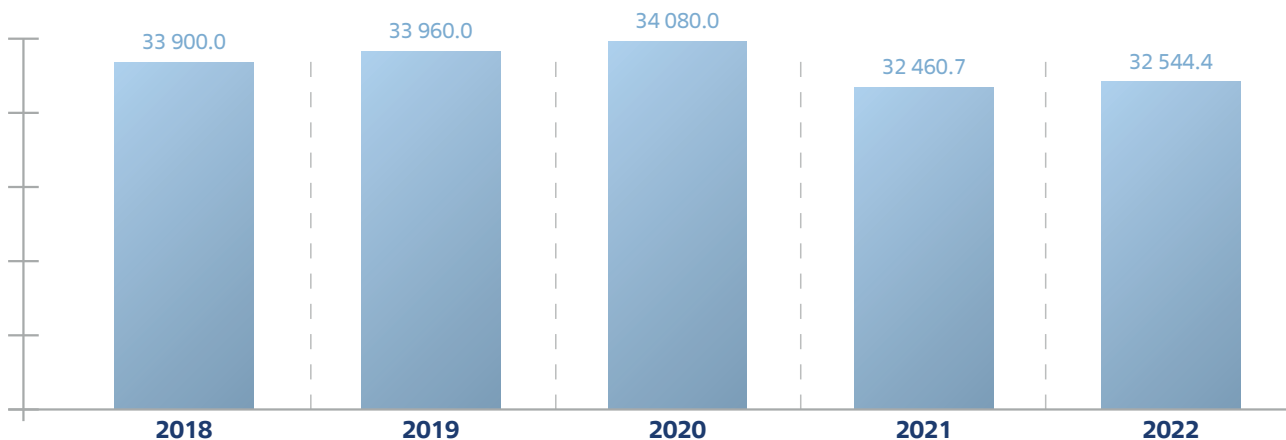


Table 3. Volume of multiply used water in YY 2018–2022

Year	Volume of multiply used water, ths. m ³	Aggregate recycled water as % the total water use
2018	33 900.0	18.0
2019	33 960.0	13.9
2020	34 080.0	17.1
2021	32 460.7	16.6
2022	32 544.4	14.3

“SCP” JSC does not practice repeated use of river water. Such technology, with the re-use of river water having been used at the Uranium Enrichment Plant (UEP), is practiced in the turbine cooldown system of the co-generation plant “RIR” JSC.

During YY 2018–2022, river water withdrawals for the SCP’s production needs did not exceed annual consumption limits established by respective regulating authorities.

6.2 DISCHARGE INTO THE OPEN HYDROGRAPHIC NETWORK

“SCP” JSC discharges its effluents into the Tom through the “Severn” outlet at 43.0 km from the river mouth.

The “Severn” outlet serves to discharge industrial effluents and surface water run-offs from the company’s plants (UEP, CP, CMP, and RCP), secondary-circuit heat exchange waters of the co-generation station of “RIR” JSC as well as wastewaters from municipal treatment facilities of “Seversky Vodokanal” JSC (“SVK” JSC for short).

Cooling waters from the SCP’s plants and heat exchange waters from “RIR” JSC, which constitute a major part of the SCP’s total effluent volume, flow through isolated cooling systems with no direct contact with process materials.

During YY 2018–2022, there were no violations of water discharge limits established for the “Severn” outlet. Diagram 4 and Table 4 provide data on water discharge limits and actual volumes for the “Severn” outlet

Diagram 4. Limits and volumes of water discharge through the “Severn” outlet in YY 2018–2022

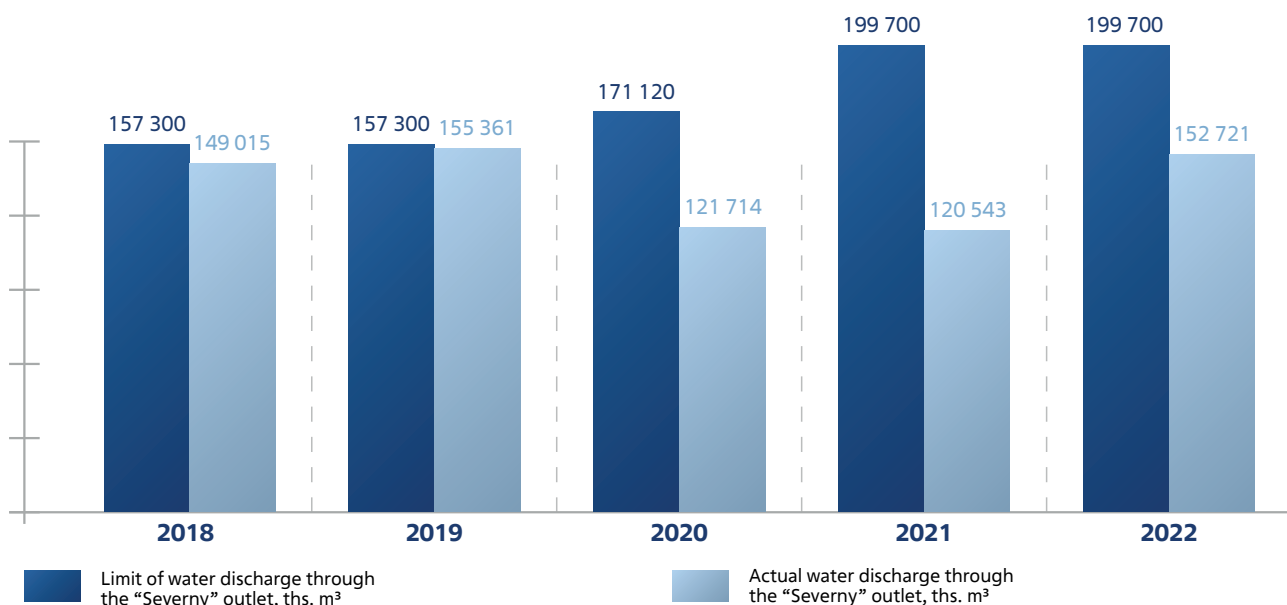


Table 4. Limits and volumes of water discharge through the “Severn” outlet in YY 2018–2022

Year	Discharge limit, ths. m3	Actual discharge, ths. m3	% of discharge limit
2018	157 300	149 015	94.7
2019	157 300	155 361	98.8
2020	171 120	121 714	71.1
2021	199 700	120 543	60.4
2022	199 700	152 721	76.5

Effluents discharged through the “Severn” outlet in 2022, therewith, amounted to:

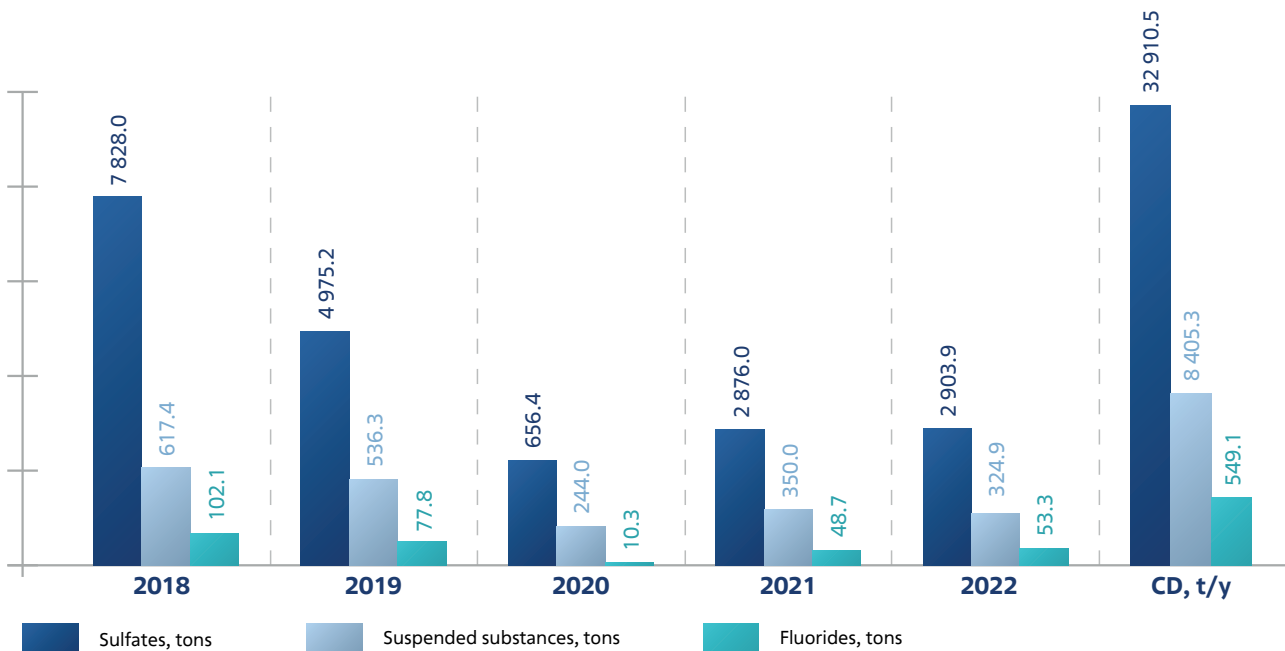
- 133 800 ths.m3 or 87.6 % of the total discharge for “RIR” JSC;
- 7 126 ths.m3 or 4.7 % of the total discharge for “SVK” JSC.



6.2.1 DISCHARGE OF HARMFUL CHEMICALS

The 2022 total discharge of harmful chemical substances (HCS) amounted to 11,534.2 tons that is 8.8% of PDS. Of this amount, 2,631.8 tons or 22.8% of the total discharge fall into wastewaters produced by SC “SVK”. Diagram 5 shows the history of harmful chemical substances discharged during the period of 2018–2022.

Diagram 5. History of main HCS discharged during 2018–2022 as against consented discharge



Harmful chemicals discharged into the Tom with wastewaters produced by “SCP” JSC over the period under review did not exceed the consented discharge established for the SCP by respective oversight authorities, and they amounted to 1.8 - 12.0% of the consented discharge. The data on main harmful chemicals discharged through the “Severn” outlet in 2022 are given in Table 5.

Table 5. Effluent discharge of harmful chemicals through the “Severny” outlet

Substance Name	Hazard class	Consented discharge, t/ y	2022 actual discharge	
			t/ y	% of Consented Discharge
Fluoride anion	3	549.175	53.311	9.7
Petrochemicals	3	73.690	2.693	3.7
Ferrum	4	83.874	10.060	12.0
Nitrate anion	4	1 991.009	36.075	1.8
Nitrite anion	4	69.895	5.196	7.4
Sulfate anion	4	32 910.560	2 903.963	8.8
Suspended substances	-	8 405.373	324.937	3.9

6.2.2 RADIOACTIVE DISCHARGE

“SCP” JSC abides by the established limits for the effluent discharge of radioactive substances (RS) into the Tom through the “Severny” outlet.

In 2022, radionuclides uranium-234, uranium-235, uranium-238, plutonium-239, strontium 90, caesium 137, cerium-144, and ruthenium-240 monitored by the SCP at the place of wastewater discharge effluents into the Tom River were not detected at the lower limits of the methods for their determination, which do not exceed the respective intervention levels for the content of these radionuclides in drinking water specified by the Radiation Safety Standards (NRB 99/2009).

Exceeding the sanitary standards established for the RS discharge into the open hydrographic network was not registered.



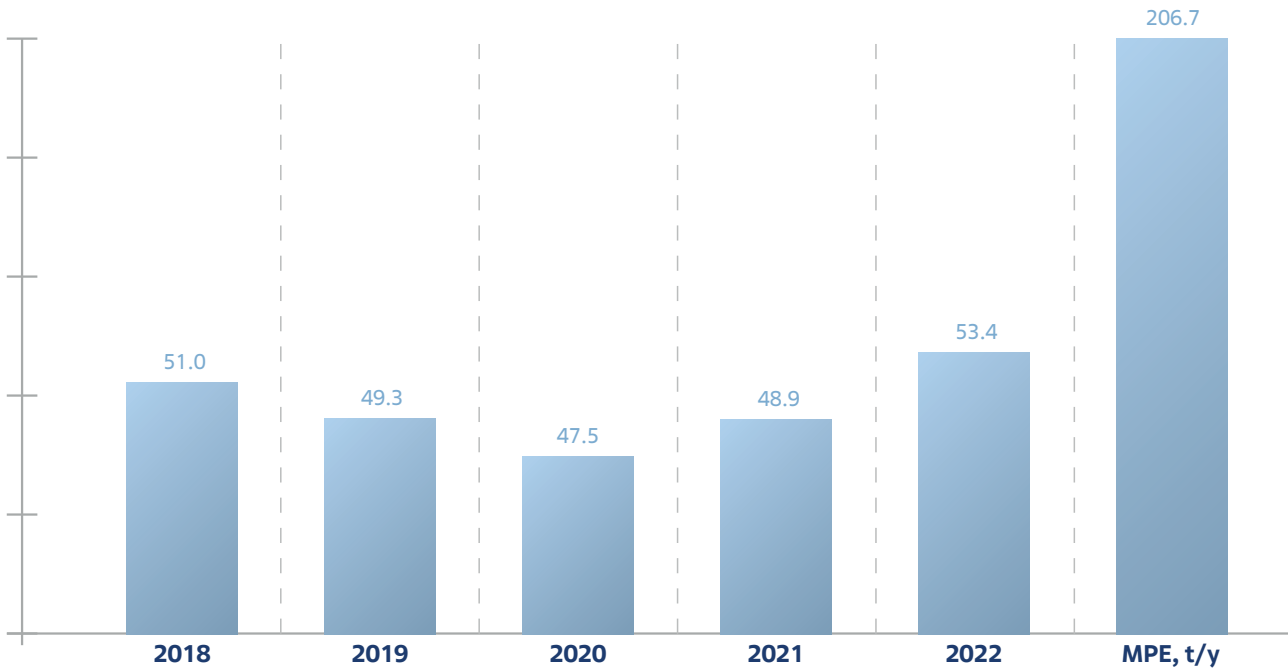
6.3 ATMOSPHERIC EMISSIONS

6.3.1 HARMFUL CHEMICAL EMISSIONS

The 2022 harmful chemical emissions totaled 53.434 tons or 25.8% of the maximum permissible emission (MPE).

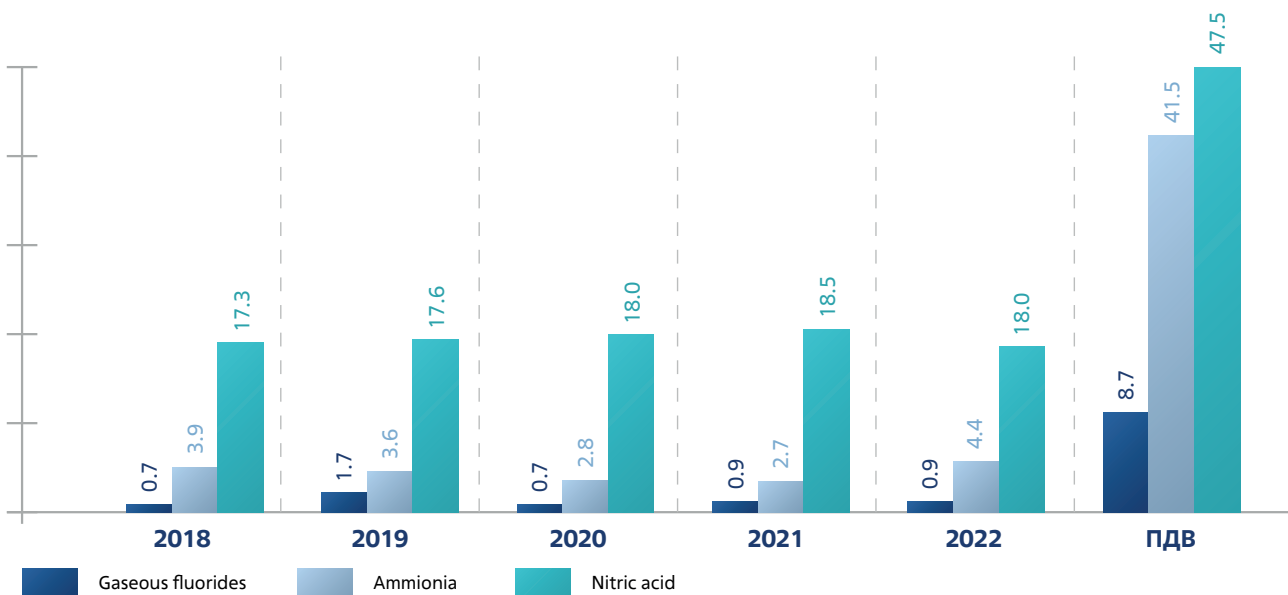
The history of harmful chemical emissions for the period of 2018 –2022 is shown in Diagram 6.

Diagram 6. History of harmful chemical emissions for YY 2018–2022 as against MPE



Main pollutants released into the atmosphere by the SCP’s plants are fluorine compounds, ammonia, and nitric acid. Diagram 7 shows the evolution of discharge of main harmful chemicals as compared to the relevant sanitary standard.

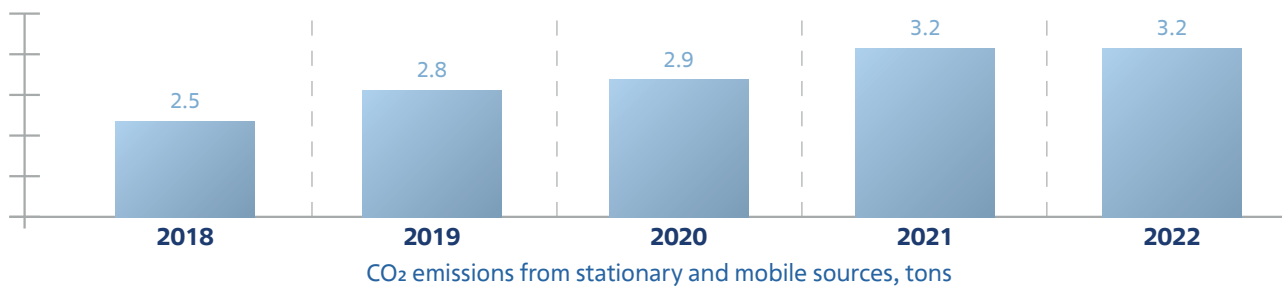
Diagram 7. History of main HCS discharge during YY 2018–2022 as against MPE



Emissions of pollutants induced by the SCP’s operations did not exceed the established MPE standards.

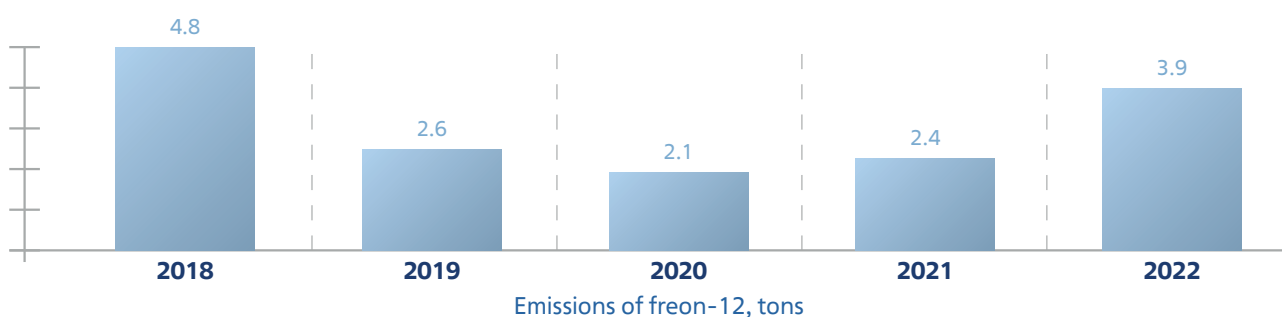
The main source of greenhouse gas emissions at “SCP” JSC is fuel combustion in motor vehicles. Diagram 8 shows carbon dioxide emissions from stationary and mobile sources.

Diagram 8. History of carbon dioxide emissions for YY 2018–2022



Emissions of ozone-depleting substances are shown in Diagram 9.

Diagram 9. History of freon-12 emissions for YY 2018–2022



6.3.2 RADIOACTIVE EMISSIONS

Like previous years, the year 2022 demonstrated a steadily low level of radioactive emissions, which amounted to a mere 0.1, 2.3 % of MPE. Table 6 provides data on atmospheric emissions of radioactive substances during the period of 2018–2022.

Table 6. History of atmospheric RS emissions in YY 2018–2022

Name of RS (radionuclide)	Actual atmospheric emission of RS, % of MPE				
	2018	2019	2020	2021	2022
Total alpha-active nuclides	2.1	2.0	1.6	2.1	2.3
Total beta-active nuclides including:	0.7	0.7	0.4	0.7	0.7
- Strontium-90	0.5	0.2	0.2	0.2	0.1

Emissions of “SCP” JSC into the atmosphere did not exceed the established emission standards.

According to the results of industrial control of atmospheric air in 2022, the average annual concentrations of RS in the surface layer of atmospheric air in the buffer and observation areas of “SCP” JSC were at levels close to background values.

The strontium-90, cesium-137, and plutonium-239,-240 concentrations in the ground air were thousand- and million-fold lower than the sanitary levels established for the population by the relevant Radiation Safety Standards (NRB-99/2009).

Based on the data of the SCP’s Automated Radiation Environment Monitoring System (AREMS), gamma-radiation intensity in the company’s buffer area and observation area, was 0.07 μSv/h which corresponds to the background level for the region (0,07 μSv/h).



6.4 WASTER

6.4.1 PRODUCTION AND CONSUMER WASTE MANAGEMENT

In 2022, production and consumer waste increased by 47.9 %, as compared with 2021, and totaled to 2407.9 tons or 37.5 % of the annual waste generation limit established for the SCP by supervisory authorities. The main part (77.9%) in the total mass of generated waste was of hazard class 5 (i.e. practically non-hazardous waste).

The increase in the amount of production and consumption waste is due to the increased amount of

waste of the 5th hazard class (scrap and waste containing uncontaminated ferrous metals) that arose from the 2022 repair and disassembly work in the SCP's subdivisions (the CP, the RCP, the Central Plant Laboratory, and the Hydropower Supply Workshop) work on the decontamination of metal waste contaminated with radioactive substances as well as the replacement and disposal of equipment at the CP and the Hydropower Supply Workshop. Diagrams 10 and 11 below show the structure of generated waste by hazard class (type) and management method.

Diagram 10. Structure of waste generation in Y 2022

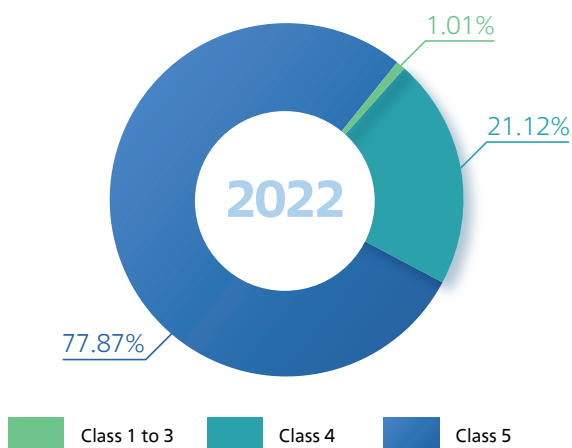


Diagram 11. Structure of waste management in Y 2022

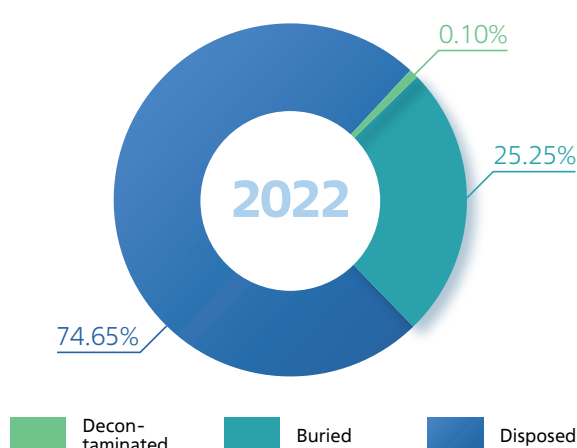


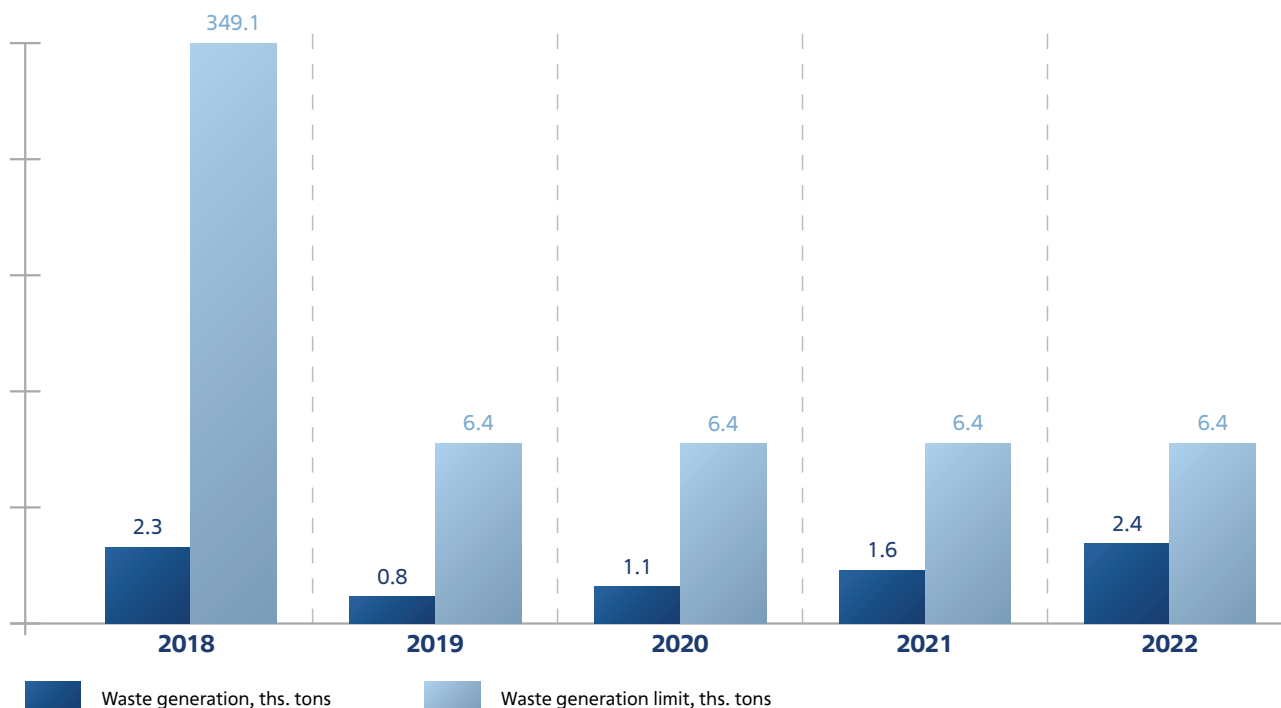
Table 7 provides information on the generation (with breakdown by hazard class) of production and consumer waste, their transfer for disposal, burial and decontamination for the period of 2018–2022.

Table 7. Waste generation, disposal, burial and decontamination for YY 2018–2022

Waste management at “SCP” JSC	2018	2019	2020	2021	2022
Waste generation					
Total generation, t	2345.0	811.0	1079.0	1628.5	2407.9
Hazard class 1	3.2	4.8	2.4	2.9	2.4
Hazard class 2	0	11.4	0	0	0
Hazard class 3	13.1	13.9	0.9	26.1	21.9
Hazard class 4	740.7	448.6	480.2	458.4	508.6
Hazard class 5	1588.0	332.3	595.5	1141.1	1875.0
Waste management methods					
Disposed at SCP, t	0	0	0	0	0
Decontaminated at SCP, t	0	0	0	0	0
Buried at SCP, t	6	0	0	0	0
Transferred to other organizations, total t	2576	640	903	557	2376
- for disposal	1794	113	398	52	1773
- for burial	779	522	503	502	600
- for decontamination	3	5	2	3	3

Diagram 12 shows changes in waste generation by “SCP” JSC during the recent five years, in comparison with the established norms.

Diagram 12. History of the SCP’s waste generation in YY 2018–2022 vs. established norms



During 2018–2022, “SCP” JSC generated and placed waste in keeping with the established norms and limits.

On the grounds of the SCP’s application No. 11-11-01/5622 of March 14, 2019 “On Decommissioning of the Waste Disposal Site”, the IV and V hazard class waste disposal site located at the RCP was excluded from the State Registry of Waste Disposal Sites (SRWDS) by order No. 160 of April 19, 2019 issued by the Federal Service of Supervision of Use of Natural Resources.

Since August 2018, waste has not been placed at the waste disposal facility (WDF) of the RCP, but transferred to specialized landfills of third-party organizations under contracts drawn up in accordance with the procedure in force at the plant.

Currently, “SCP” JSC is making efforts to decommission the RCP’s WDF. In 2020, in accordance with the Unified Industry Procurement Standard, procurement procedures were carried out, and the executor of project documentation, “RAOTECH” LLC, was found. Survey work was done in 2021.

Currently, “SCP” JSC is making efforts to decommission the RCP’s WDF. In 2020, in accordance with the Unified Industry Procurement Standard, procurement procedures were carried out, and the executor of project documentation, “RAOTECH” LLC, was found. Survey work was done in 2021.



6.4.2 RADIOACTIVE WASTE MANAGEMENT

The SCP plants' production operations involving radioactive substances and nuclear materials generate solid and liquid radioactive waste (RW).

Solid radioactive waste (SRW) mainly include radionuclide-contaminated personal protection equipment, process waste, junked devices, spent components of equipment, metal scrap, and radionuclide sources with expired useful life. Solid radwaste is placed in dedicated storage facilities that are special-design constructions. The monitoring efforts so far have not identified any impacts by the SCP's SRW storages outside of the company's production sites.

Liquid radioactive waste (LRW) includes spent water systems contaminated with radionuclides: drain water, ditch water, washing solutions, and water from decontamination stations. Low-level LRW is placed at LRW storage sites Pulp Storage 2 (PS-2), Water Storage 3,4 (storages), after that, it goes to the site for special preparation of LRW for burial (site No. 13). Once prepared, LRW is transferred to Federal Unitary State Enterprise "National Operator for Radioactive Waste Management" (FUSE "NORWM") for disposal at the geological repository operated by FUSE "NORWM".

Intermediate-level LRW is processed at the RCP to meet the acceptance criteria and then transferred to the national operator for its disposal at the geological repository of FUSE "NORWM".

As a result of the implementation of the Federal target Program, three storage pools have been conserved (i.e. pools P-1, P-2 and P-25).

"SCP" JSC carries out radiation control and geotechnological monitoring of the migration of radioactive substances into groundwater. Observations wells are arranged in the territory around RW storages.

The seismotectonic setting in the RW storages location area is characterized as relatively tranquil and, from assessments made by the Nuclear-Related Geodynamic Monitoring Service Center, affiliated to the S.Ya. Zhuk "Hydroproject" Scientific-Research Institute for Design and Exploration, it will not significantly affect the operation of radwaste storages for long geologic time. There are no geohazards (e.g. kharst, land- and mudslides, collapsing soil, etc.) in the areas adjacent to the storage locations. By the same token, the land area hosting radwaste storages features no active tectonic faults.

The radwaste storage sites are fitted with the required physical protection arrangements. The nearest railways of the Russian rail network run at 8 km from the SCP's location, and the distance to the region's highways is approximately 5 km, due to which, in the event of a large-scale emergency (e.g. fire, release of harmful chemicals) occurring on the highways, the action of affecting factors will not extend to the SCP's facilities. The nearest airport is situated at a 32 km southwards, and the regional airway is at a 22 km east of the SCP production site. Flights over the SCP territory are prohibited.

The safe operation of LRW storages is confirmed by the relevant licenses granted by the Federal Service for Environmental, Technological and Nuclear Supervision based on its review of submitted documentation packages substantiating this activity.

Diagrams 13 and 14 show the structure of solid and liquid radwaste generated in 2022 by activity category.

Diagram 13. Structure of solid radwaste generated by "SCP" JSC in 2022

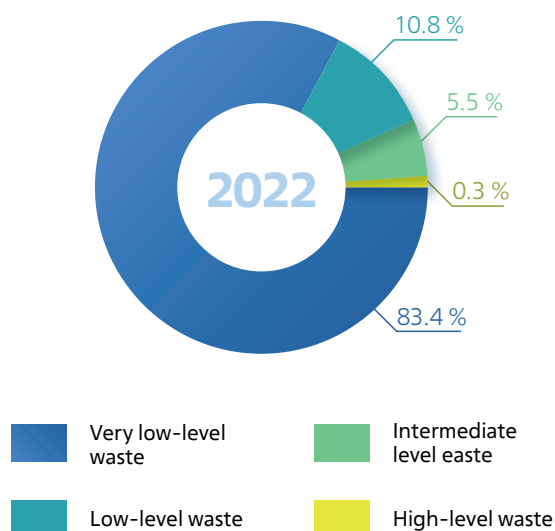
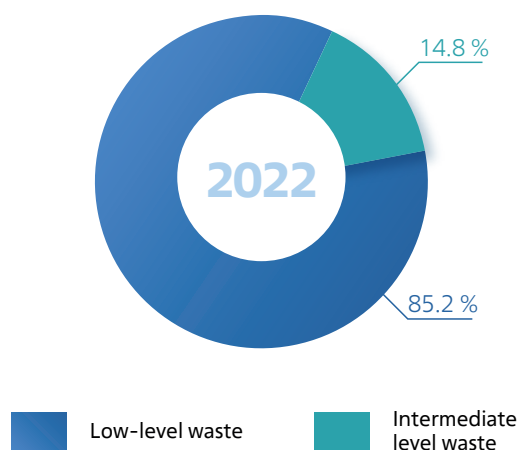


Diagram 14. Structure of Liquid Radwaste Generated by "SCP" JSC in 2022



6.5 ENVIRONMENTAL CONDITIONS IN “SCP” JSC LOCATION AREAS

6.5.1 THE FINDINGS OF ENVIRONMENTAL MONITORING IN THE SCP LOCATION AREAS IN 2022

Annual average radionuclide volumetric activities in the surface air in the buffer and observation areas of “SCP” JSC were close to the background levels, and in 2022 they amounted to:

- strontium-90 – 7-8 orders of magnitude less than the allowable mean annual volumetric activity for the population (AMAVAP) established by the Radiation Safety Standards (NRB-99/2009) for strontium-90;
- plutonium-239,-240 – 4-6 orders of magnitude less than the AMAVAP established by the Radiation Safety Standards (NRB-99/2009) for plutonium-239,-240;
- monitored radionuclide cesium-137 was not identified in the open air, even though the lowest limit of the detection method used was by 8 orders less than the respective AMAVAP;
- Total alpha-active nuclides – by 2 orders less than the AMAVAP specified by the Radiation Safety Standards (NRB-99/2009) for plutonium-239,-240;
- Total beta-active nuclides – by 4 orders less than the AMAVAP specified by the Radiation Safety Standards (NRB-99/2009) for strontium-90.

The maximum one-time concentrations of controlled HCS (ammonia, nitrogen dioxide, sulfur dioxide, fluoride compounds) in the surface layer of atmospheric air in the SCP’s buffer and observation areas were not detected at the lower limits of methods for their determination, which are 1.2 - 6.6 times less than the maximum one-time permissible concentrations established by hygienic standards SanPiN 1.2.3685-21 "Hygienic norms and requirements to ensure safety and (or) harmlessness to humans of habitat factors".

Annual average values of gamma-radiation ambient equivalent dose rate (ADER) in the SCP’s buffer area and observation area amounted to 0.07 $\mu\text{Sv/h}$ that stands the level of annual average background values (0.07 $\mu\text{Sv/h}$).

In 2022, the average yearly individual effective dose for the population of Seversk and other settlements located within the SCP’s observation area, induced by the company’s operations, amounted to:

- for Seversk citizens employed in the SCP’s buffer area – no more than 0.03 $\mu\text{Sv/year}$ at the mean for consecutive five years (2018-2022) and no more than 0.03 mSv for the reporting year, which, respectively, is no more than 3% and no more than 1% of the dose limits established by NRB-99/2009 for the population (1 μSv per year on average for any consecutive 5 years, but not more than 5 μSv per year);
- For residents of rural settlements living in the northern (leeward) direction from the plant at a distance of up to 18 km - no more than 0.02 μSv on average for consecutive 5 years (2018-2022) and no more than 0.02 μSv for the

reporting year, which, respectively, is no more than 2% and no more than 1% of the dose limits established by NRB-99/2009 for the population (1 μSv per year on average for any consecutive 5 years, but not more than 5 μSv per year).

6.5.2 DURING 2022, NO CASES OF RADIONUCLIDE CONTAMINATION OF THE SCP’S PRODUCTION SITE AND BUFFER AREA WERE REGISTERED

The SCP’s production site and buffer area do have some regions contaminated with radionuclides as a consequence of the company’s multi-year operation; the total area of such regions is 14.6 km².

Such contaminated regions, according to the agreed classification, include territories on the SCP’s production sites (including the locations of open liquid radwaste water storages and the adjacent regions) and in its buffer area (i.e. the site housing the SCP’s waste water settling pond).

The observation area of the SCP has no regions contaminated with radionuclides.



7 IMPLEMENTATION OF THE ENVIRONMENTAL POLICY

7.1 ENVIRONMENTAL IMPACT MITIGATION MEASURES

The planning and carrying-out of measures aimed at protecting the environment and ensuring the environmental safety is exercised in pursuit of the Environmental Policy adopted by “SCP” JSC.

The SCP’s plan of environmental protection measures and the related program for meeting environmental objectives include actions needed to:

- ensure the rational use of natural resources;
- introduce advanced technologies to decrease the environment pollution from all types of waste (gaseous, liquid, and solid);
- implement innovation and investment projects;
- improve the ongoing production processes;
- build new or upgrade (refurbish) current waste treatment facilities (installations);

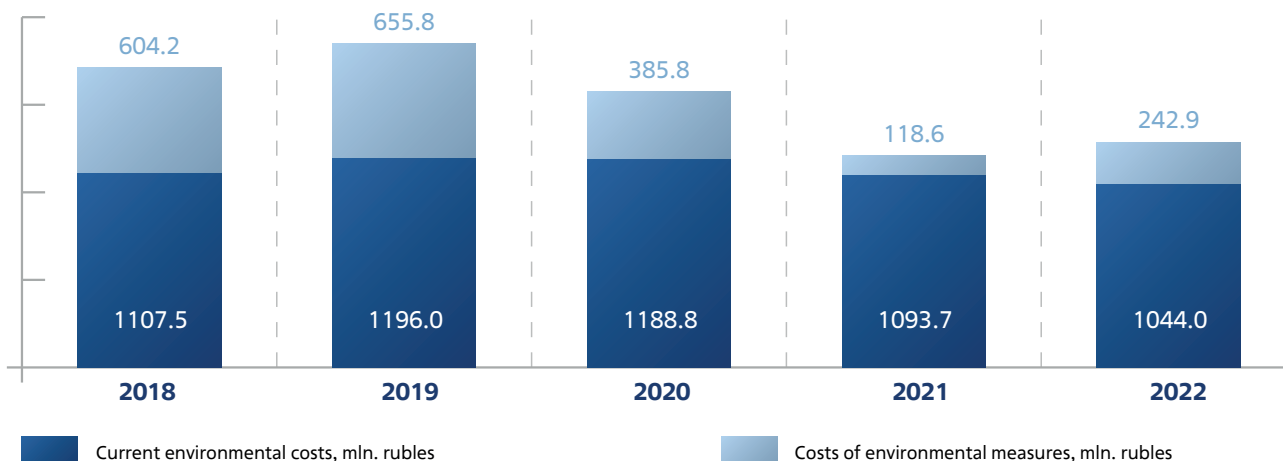
- construct state-of-the-industry facilities to store solid and liquid radwaste;
- improve the procedure for handling all types of waste;
- Reduce or eliminate atmospheric emissions of pollutants, their discharge into the inland fresh water system, etc.

Every year the SCP invests significant financial resources in the protection of the environment and in the implementation of associated measures. In 2022, total environmental expenditures from all financial sources ran to 1.287 bln rubles. Table 8 and Diagram 15 provide data on annual environmental expenditures.

Table 8. Environmental expenditures in YY 2018–2022

Type of expenditure, mln. rubles	2018 г.	2019 г.	2020 г.	2021 г.	2022 г.
Current environmental expenditures	1107.5	1196.0	1188.8	1093.7	1044.0
Expenditures on environmental measures	604.2	655.8	385.8	118.6	242.9
Total environmental expenditures	1711.7	1851.8	1574.6	1212.3	1286.9

Diagram 15. History of environmental costs in YY 2018–2022



The 2022 current environmental expenditures include:

- current (operating) costs – 982.39 mln. rubles;
- payments for hired environmental services – 27.17 mln. rubles;
- expenditures on major repairs of key environmental assets – 8.16 mln. rubles;
- depreciation expenses for the restoration of key EP assets – 26.28 mln. rubles.

THE 2022 EXPENDITURE FOR PLANNED ENVIRONMENTAL MEASURES, FROM ALL SOURCES OF FINANCE, TOTALED 242.9 MILLION RUBLES.

Table 9 provides information on main planned measures and actual work completed.

Table 9. Environmental measures taken by “SCP” JSC in Y 2022

Description	2022 actual expenditures, mln. rubles.
Creation of a neutralizing agent preparation station and a station for dry discharge of tailings at the Conversion Plant	101.4
Maintenance of biodiversity in the water body of the Tom River	0.9
Isolation of accumulated radwaste. Creation of safety barriers for RW storage facilities "Pulp Storage 1" (PS-1), "Pulp Storage 2" (PS-2)	140.6
TOTAL	242.9

7.2 ENVIRONMENTAL MEASURES PLANNED FOR 2023

For 2023, the SCP plans to perform environmental activities to the total amount of 709 mln. rubles; the information on types of activities is provided in Table 10.

Table 10. Environmental Measures Planned by “SCP” JSC for Y 2023

Description	2023 planned costs, mln. rubles.
Upgrade of equipment of the system for the radiation monitoring of the mothballed pool P-2	15.5 ⁽¹⁾
Isolation of accumulated radwaste. Creation of safety barriers for RW storage facilities "Pulp Storage 1" (PS-1), "Pulp Storage 2" (PS-2)	47.8 ⁽²⁾
Isolation of accumulated radwaste. Creation of safety barriers for RW storage facility “Structure 263”	237.5 ⁽¹⁾
Construction and commissioning of a neutralizing agent preparation station and a station for dry discharge of tailings at the Conversion Plant	408.2 ⁽³⁾
ИТОГО	709.0



Note:

- (1) The execution of the work has been postponed from 2022 to 2023.
- (2) Implementation of activities started in 2022. Completion of activities is scheduled for 2030.
- (3) Implementation of activities started in 2022. Completion of activities is planned for 2023.

7.3 PAYMENTS FOR ENVIRONMENTAL IMPACTS IN 2022

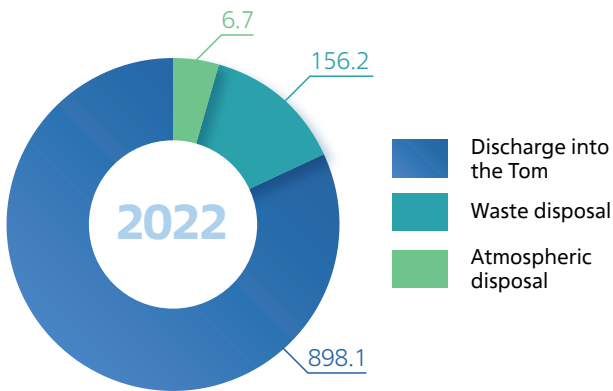
“SCP” JSC duly and fully makes payments for its environmental impacts to the budgets of all levels, according to the relevant Russian Federation budgetary laws in force.

In 2022, such payments made a total of 1061.0 ths. rubles to include:

- atmospheric emissions – 6.7 ths. rubles,
- discharge into the Tom River – 898.1 ths. rubles,
- waste disposal – 156.2 ths. rubles.

Diagram 16 shows the structure of payments for environmental impacts.

Diagram 16. Structure of environmental impact payments in Y 2022



7.4 KEY EVENTS IN THE IMPLEMENTATION OF THE ENVIRONMENTAL POLICY

In the context of its efforts to implement the Environmental Policy, in 2022 “SCP” JSC took the following measures:

- work was commenced to construct a neutralizing agent preparation station and a station for dry discharge of tailings at the Conversion Plant;
- work was started to isolate accumulated radwaste in workshop No. 4 at the RCP and to construct safety barriers of RW storage facilities, i.e. "Pulp Storage 1" (PS-1) and "Pulp Storage 2" (PS-2);
- work continued to restore the biodiversity of the water body of the Tom River. As compensation for damage to aquatic biological resources and in accordance with the Plan of artificial reproduction of aquatic biological resources, approved by the Upper Ob Territorial Department of the Federal Agency for Fisheries, in order to maintain the biodiversity of fishery water bodies, in August 2022, 21863 nelma fry were released in the Tom River, which amounted to 34.980 grams of young fish;
- “SCP” JSC continued to submit the findings of routine environmental control in due form, as required by the federal statistical environmental observation system, to the ROSATOM State Corporation by placing them in the reporting module of the General Inspectorate’s Information Analysis System “Corporate Data Store” (IAS CDS);
- the printed and electronic media published materials on the ongoing environmental actions and the implementation of environmental measures aimed at reducing environmental impacts. Educational work was carried out with teachers and students of general educational institutions on environmental protection issues



8 ENVIRONMENTAL INFORMATION AND EDUCATION PUBLIC ACCEPTANCE

8.1 INTERACTION WITH STATE AND LOCAL AUTHORITIES

The SCP appropriately and duly submits information on air protection, water use, generation, neutralization, transportation and disposal of production and consumption waste to the ROSATOM State Corporation, “TVEL” JSC, and state supervisory agencies, i.e. the Siberian Interregional Office of the Federal Service for Supervision of Use of Natural Resources (Rosprirodnadzor), the Water Resource Department of the Administration for the Upper Ob Basin of the Federal Agency for Water Resources, the Seversk affiliate of the Inspectorate of the Interregional Territorial Administration for Supervision of Nuclear and Radiation Safety of Siberia and the Far East managed by the Federal Service for Environmental, Technological and Nuclear Supervision (Rostekhnadzor), and Interregional Office No. 81 of the Federal Medical and Biological Agency.



Apart from that, the SCP submits, upon request, the results of the industrial environmental monitoring in the SCP location area to the Interregional Office No. 81 of the Federal Medical and Biological Agency, as well as the regional and local environmental agencies, i.e. the Department for Natural Resources and Environmental Protection of the Administration of the Tomsk Region and the Department for the Protection of Natural Resources and the Environment at the Seversk Administration. In addition, the SCP regularly holds meetings and events aimed at interaction with state authorities and local governments. Table 11 lists meetings and events held in 2022

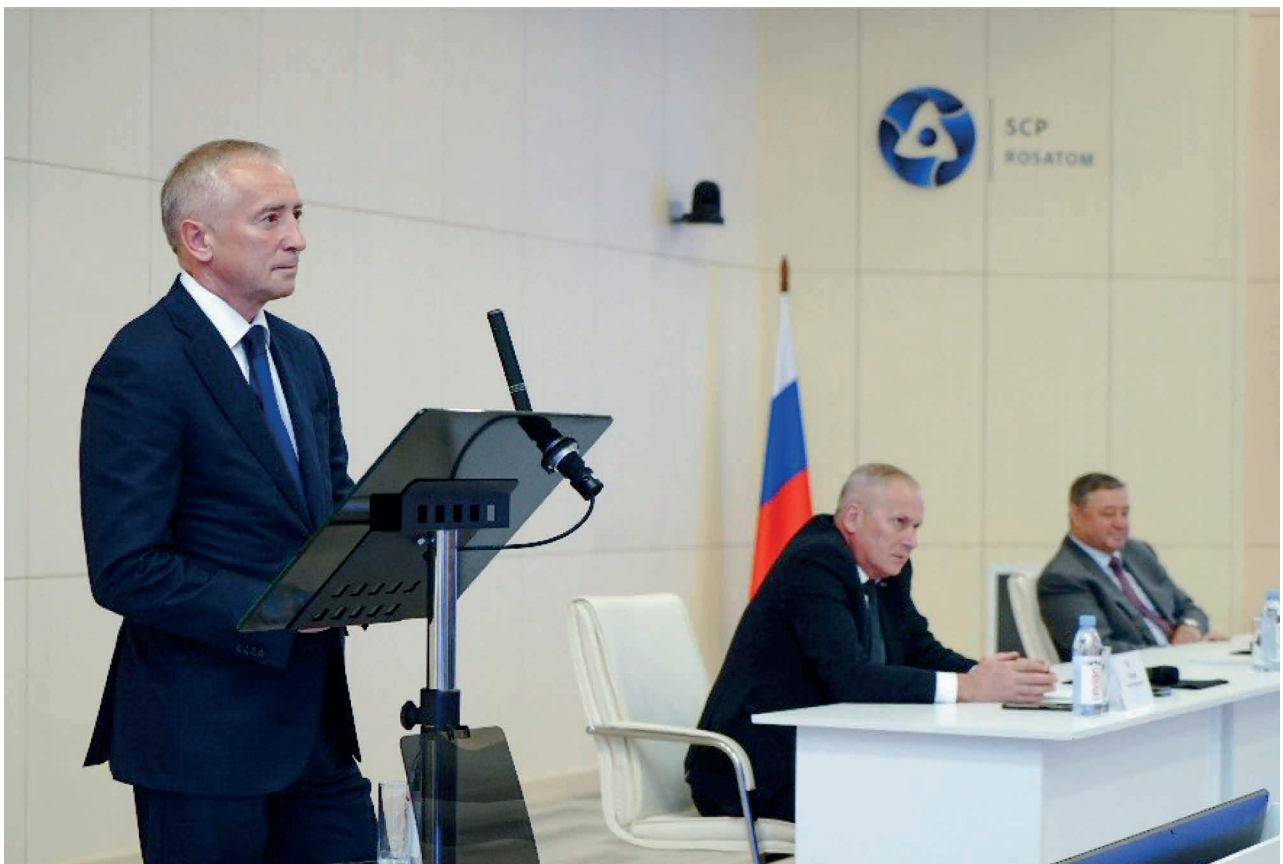


Table 11. Main activities related to interaction with state authorities and local governments

Activity	Date
The administration of ZATO Seversk held public discussions on the project documentation "Commercial production of titanium dioxide pigment using fluoride technology". Public discussions are a necessary stage of the state environmental expertise. The public assessed and recognized the safety of the planned production of titanium dioxide.	March 24
The City Duma of ZATO Seversk discussed the results of activities for the first half of 2022 and development prospects of the Siberian Chemical Plant. Andrei Galata, Deputy SCP General Director for Decommissioning and Priority Areas, advised the deputies of all key activities of the city-forming enterprise. The information was presented on research and development works performed at the SCP, non-nuclear businesses, social, environmental and charitable projects of the enterprise. It was emphasized that there are no radiation incidents and accidents, the environmental situation in the area of the SCP location is stable and favorable.	June
Vladimir Mazur, Acting Governor of the Tomsk Region, visited "SCP" JSC and the construction site of facilities being erected under the Breakthrough nuclear project, which will boost the development of construction, industry and science in the Tomsk Region.	July 12
A training information center was opened in Seversk to coach personnel for the Pilot Demonstration Power Complex under the Breakthrough project. The opening ceremony was attended by Deputy Governor of the Tomsk Region V.V. Mazur, Deputy General Director of Rosatom State Corporation for Personnel T.A. Terentyeva, President of "TVEL" JSC N.V. Nikipelova, and "SCP" JSC General Director S.A. Kotov.	July 26
Acting Governor of the Tomsk Region Vladimir Mazur held a meeting with the management of ZATO Seversk and the management of "SCP" JSC, where issues of industrial development, new production facilities of the SCP, safety issues, including environmental issues, were discussed.	August 24
"SCP" JSC held a technical tour for the deputies of ZATO Seversk. The meeting took place at the industrial site of the SCP, where the guests were also introduced to the SCP's environmental report.	August
The management of "SCP" JSC presented to the deputies of the Duma of ZATO Seversk the company's 2021 environmental report. Representatives of the deputy corps familiarized themselves with the SCP's activities in the field of environmental protection, which is of key importance for the implementation of the principles and approaches of sustainable development. A representative of the SCP management told in detail what technologies were used for conservation of open storage pools with radioactive waste, emphasizing that today "green lawns" have been created in place of the pools.	November
Anatoly Seryshev, Plenipotentiary Envoy of the President of the Russian Federation in the Siberian Federal District, visited the SCP as part of his working trip to the Tomsk Region. During the visit he familiarized himself with the activities of the SCP, discussed with the management the outlook for the development of the company, including issues related to safety and rational use of resources.	December 08

8.2 INTERACTION WITH NON-GOVERNMENTAL ENVIRONMENTAL ORGANIZATIONS, SCIENTIFIC AND SOCIAL INSTITUTIONS, AND THE PUBLIC

In 2021, “SCP” JSC carried out work with the mass media, non-governmental organizations and the public intended to inform all the parties interested of the company’s environmental efforts and of the current environmental conditions in its location area. Table 12 provides information on the 2022 activities carried out by the SCP to inform stakeholders.



Table 12. Activities aimed at informing stakeholders about environmental activities and the state of the environment

Activity	Date
Natalya Nikipelova, President of the TVEL Fuel Company, paid a working visit to the SCP. During the production meeting, issues related to the implementation of the Breakthrough Project activities, implementation of the Balanced NFC integrated program, development of the SCP as an industry platform for U-Pu fuel fabrication and development of nuclear fuel cycle closing technologies were discussed.	February 18
Representatives of "SCP" JSC took part in the work of the Council for control and monitoring of radiation situation in the organizations of the Rosatom State Corporation.	March 29
Representatives of "SCP" JSC took part in the All-Russian environmental subbotnik "Green Spring": they conducted the subbotnik activities on the territory of the memorial to the fallen soldiers during the Great Patriotic War. More than 150 people took part in the action.	April 30
Within the framework of the cultural and educational project "Museum Vacations", about 300 children of employees of the SCP and partner enterprises visited the Museum of History of "SCP" JSC. At master classes the children were introduced to the world around them, the organizers taught them to build bird houses and make eco-bags.	May to August
Representatives of "SCP" JSC took part in the work of the Strategic Session of the Fuel Company managers on scientific and technical activity, technology development and quality, held in Krasnoyarsk.	May 18-19

Activity	Date
"SCP" JSC took part in organizing and conducting sports garbage collection, an event of the first stage of the city social project "Elevation". In total, about 40 people took part in the environmental action.	May 28
"SCP" JSC took part in the first stage of the Tomsk city youth program "CorporaTEAM" - "Clean Games". More than 20 teams participated in the action. In total, the teams from Tomsk and Seversk collected more than a ton of garbage.	May 29
"SCP" JSC held a subbotnik on the Alley of Young Nuclear Workers. The participants cleaned the territory of the alley from garbage, repaired benches and planted more than 20 saplings of various trees.	June 11
In order to increase the prestige of the environmentalist profession and the image of "SCP" JSC, a representative of the company took part in the divisional professional skills competition of the Fuel Company TVELSkills-2022 in the "Environmental Protection" competence.	June
Representatives of "SCP" JSC took part in the annual scientific and practical seminar "Radiation safety and environmental protection in the nuclear industry", which was held in Murmansk.	August 01-05





Activity	Date
At the big Seversk ring, which is located at the entrance to the city, the SCP held an event on sports collection and sorting of garbage.	August 14
A representative of "SCP" JSC took part in the VII industry championship of professional skills AtomSkills-2022 in the "Environmental Protection" competence.	August
As part of the Energy of Intellect festival, a science and education event "Save the Planet" was held. For two hours, schoolchildren visited four scientific laboratories. They saved the coast from an ecological disaster and cleaned penguins from oil stains, assembled models of wind farms and solar-powered stations, learned to sort plastic waste, and removed heavy metals from the soil.	October 16
In Seversk, at the site of the Pilot Demonstration Power Complex, which is being created at the Siberian Chemical Plant as part of the industry project "Breakthrough", a certificate of technical readiness of the main circulation pumping unit (MCPU) acceptance test bench was signed. The signing was addressed by the heads of the Rosatom State Corporation.	December 29
50 events were held at the Museum of History of "SCP" JSC and at offsite sites (educational programs, excursions, lectures, etc.).The number of participants was 10041 people.	In the course of the year



8.3 PUBLIC INFORMATION ACTIVITY

In order to improve the ecological culture of the employees of "SCP" JSC and the population of Seversk, Tomsk and the Tomsk region in 2022, environmental printed products were produced and distributed.

Information materials on environmental topics (posters, photographs) were placed on information stands in the subdivisions of the SCP.

The website www.atomsib.ru contains a section on environmental protection, where the text of the Environmental Policy and the SCP's annual public reports on the environmental safety have been posted since 2010. In order to ensure the availability of information for stakeholders, starting from 2017, the SCP's environmental reports are translated into English and also posted on the Internet.

The website contains links to the Corporate Blog of "SCP" JSC and Twitter of "SCP" JSC, which reflects all the company's activities, including those in the field of ecology and environmental protection.

Weekly issues of the corporate Novoye Vremya newspaper, the Sorokovochka TV program, the coverage of environmental issues in news spots on the corporate Radiozavod network, monthly updates of video information broadcast on a led display in the Theater Square in the center of Seversk, i.e. pictures and video clips representing environmental measures and events at the SCP, also attest to the transparency of "SCP" JSC, environment-wise.



217 environmental materials were placed in corporate mass media, of them:

- 37 press releases on the external website of "SCP" JSC in the company's news section;
- 47 publications in the Novoye Vremya corporate newspaper;
- 118 news on the internal portal and in the corporate "Radiozavod" network;
- 15 shots in the TV program "Sorokovochka".

The management of "SCP" JSC ensures that the public is well informed of the environmental performance of the company, demonstrates openness and active interaction with the public and other interested parties.





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2022 ENVIRONMENTAL REPORT**