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REPORT ON THE  
ENVIRONMENTAL  
IMPACT OF JAVYS, a. s.,  
OPERATIONS 2021

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# 1. INTRODUCTION

The Environment Report 2021 provides comprehensive information on the air protection, water and waste management systems, on the handling and use of chemicals, on environmental impact assessment (EIA) processes and on activities related to the environmental protection performed within JAVYS, a. s.

JAVYS, a.s. is certified in environmental management system in accordance with the ISO standard 14001:2015 Environmental Management Systems, which demonstrates our goal and mission to perform all activities related to environmental protection.

Environmental protection forms part of the Safety process within the framework of the integrated management system.

During the performance of all the activities, emphasis is placed on compliance with the legal requirements of the SR and EU in the individual fields of environmental protection; and on the obligation to comply with limits and conditions included in decisions made by state authorities and regulatory bodies which oversee the protection of individual environmental components.



## 2. AIR PROTECTION

In the field of air protection, JAVYS, a. s. complies with the basic legal regulation, i.e. Act 137/2010, Coll., on Air, as amended, adopted by the National Council of the Slovak Republic, and with all subsequent related acts, executive ordinances and regulations of the Government of the Slovak Republic.

The method to operate sources of air pollution, be it the granting of permits, the specification of the emission monitoring system, and the definition of the limits of pollutants discharged into the air, is governed by applicable decisions by the national authorities and supervisory bodies in relation to the air protection issued for JAVYS, a. s.

### Sources of air pollution and volumes of discharged emissions

In 2021, JAVYS, a. s. operated multiple stationary air pollution sources in the medium and small sources categories.

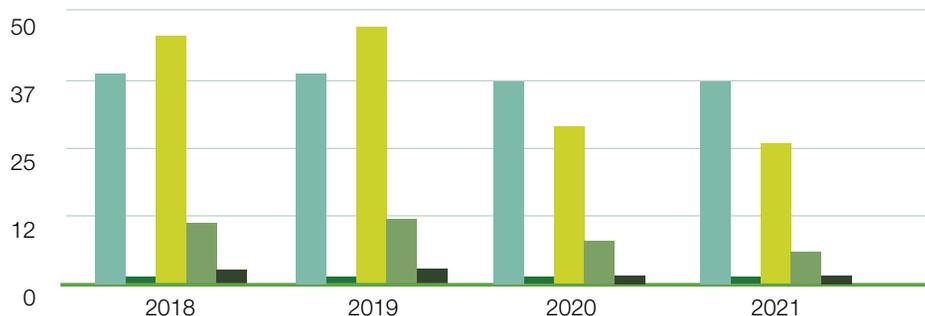
|   |               |
|---|---------------|
| Reserve boiler plant (RBP)  | medium source |
| Diesel generator in pumping station "V1"                            | medium source |
| Diesel generator adjacent to the outdoor switchboard "A1"           | medium source |
| Diesel generator in sub-station V1 (2 pcs)                          | medium source |
| Diesel generator next to ISFS (interim spent fuel storage)          | medium source |
| Production of fibre concrete mixture in the V1 FCC production plant | small source  |



## Amount of Fuel Consumed, Number of Operating Hours and Amount of Emissions Discharged from Individual Sources in 2021

| Air pollutant   | Fuel                                       | Number of operating hours | Amount of pollutant (kg) |                       |                       |              |                        |
|---|--|---------------------------|--------------------------|-----------------------|-----------------------|--------------|------------------------|
| <b>Medium air pollution sources</b>   |  |                           |                          |                       |                       |              |                        |
| <b>Reserve boiler plant</b>   | <b>natural gas (thous. Nm<sup>3</sup>)</b> | <b>hours/year</b>         | <b>Solid pollutants</b>  | <b>SO<sub>2</sub></b> | <b>NO<sub>x</sub></b> | <b>CO</b>    | <b>C<sub>org</sub></b> |
|   | 4.813                                      | 8.8                       | 0.366                    | 0.044                 | 7.986                 | 2.710        | 0.352                  |
| <b>Diesel generators</b>  | <b>diesel (tonnes)</b>                     | <b>hours/year</b>         | <b>Solid pollutants</b>  | <b>SO<sub>2</sub></b> | <b>NO<sub>x</sub></b> | <b>CO</b>    | <b>C<sub>org</sub></b> |
| DG Caterpillar Olympiád   | 0.318                                      | 14.8                      | 0.452                    | 0.006                 | 1.590                 | 0.254        | 0.023                  |
| DG Martin Power MP 1700   | 1.621                                      | 8.5                       | 2.302                    | 0.032                 | 8.105                 | 1.297        | 0.178                  |
| DG1 Martin Power MP 400/2 ks  | 0.092                                      | 4.2                       | 0.131                    | 0.002                 | 0.462                 | 0.074        | 0.010                  |
| DG Caterpillar C13ATAAC400-SA   | 1.352                                      | 20.5                      | 1.920                    | 0.027                 | 6.760                 | 1.082        | 0.149                  |
| <b>Small air pollution sources</b>  |  |                           |                          |                       |                       |              |                        |
| <b>FMC production</b>   | -  | -                         | 30.665                   | -                     | -                     | -            | -                      |
| <b>Total amount of pollutants from all small air pollution sources (kg)</b> |  |                           | <b>35.836</b>            | <b>0.111</b>          | <b>24.903</b>         | <b>5.417</b> | <b>0.712</b>           |

## Amounts of discharged emissions of all air pollutants (2018 – 2021)



The amounts of discharged emissions of air pollutants were slightly lower in 2021 compared to previous years.

**Amounts of Emissions Discharged from the BRWTC  
(Bohunice Radioactive Waste Treatment Centre)  
Incineration Plant (2018 - 2021)**

| <b>Pollutant (kg)</b>         | <b>2018</b>  | <b>2019</b>  | <b>2020</b>  | <b>2021</b>  |
|-------------------------------|--------------|--------------|--------------|--------------|
| HCl                           | 0.450        | 9.108        | 6.210        | 16.640       |
| HF                            | 6.660        | 1.207        | 1.240        | 6.600        |
| Hg + Tl + Cd                  | 0.233        | 0.217        | 0.218        | 0.085        |
| As + Ni + Cr + Co             | 1.332        | 1.238        | 1.249        | 0.383        |
| Pb + Cu + Mn                  | 0.832        | 0.773        | 0.780        | 0.194        |
| SO <sub>2</sub>               | 91.960       | 60.500       | 39.700       | 80.610       |
| NO <sub>x</sub>               | 666.280      | 676.300      | 931.000      | 839.620      |
| CO                            | 86.400       | 114.300      | 56.700       | 27.240       |
| Solid pollutants              | 1.590        | 3.600        | 0.050        | 1.640        |
| C <sub>org</sub>              | 6.260        | 8.500        | 1.370        | 0.800        |
| <b>Operating hours / year</b> | <b>6,697</b> | <b>7,046</b> | <b>7,160</b> | <b>8,107</b> |

The BRWTC incineration plant's operation does not fall under the Act on Air as it is not categorized under sources of air pollution. The state supervision of the incineration plant is provided by the Nuclear Regulatory Authority of the Slovak Republic.

**Equipment containing fluorinated greenhouse gases**

Pursuant to Act No. 286/2009, Coll., on Fluorinated Greenhouse Gases, and Regulation 517/2014 of the European Parliament and the Council (EC) on Fluorinated Greenhouse Gases, JAVYS, a. s. is the operator of multiple equipment containing fluorinated greenhouse gases (F gases). Such gases are mainly found in air conditioning units, current and voltage transformers, switchboards and stationary fire suppression equipment. The operators of equipment which contain

**Air pollution charges (NEIS)**

In line with Act 137/2010 Coll. on Air, and Act 401/1998 Coll. on Air Pollution Charges, JAVYS, a. s. is obliged to annually report data on stationary sources, amounts of pollutants discharged into the air in the previous year, its compliance with the emission limits and the calculated annual charge for all medium air pollution sources. The data are sent to the relevant District Environment Office (in compliance with the cadastral area based on the Land Register where the source is situated) and, subsequently, to the National Emission Information System (NEIS).

With regard to the negligible amounts of pollutants produced (calculated in compliance with the approved calculation formulas) in 2021, JAVYS, a. s. was not obliged to pay any charge for the emissions discharged as a result of the operation of its medium air pollution sources. The amount of € 18,36 was charged by Municipal Office Jaslovské Bohunice for the operation of a small source of air pollution.

F gases provide for regular mandatory inspections of discharged F gases on all such equipment. Inspections are performed by professionally competent individuals. In line with the Act, JAVYS, a. s., sent the annual report on fluorinated greenhouse gases to the relevant District Offices, Departments of Environmental Protection. The report concerned equipment with a volume of 5 and more tonnes of CO<sub>2</sub> equivalent, within the deadline specified by the Act.

## Greenhouse gas emissions

Pursuant to Act No. 414/2012 Coll., on Emission Allowances Trading, JAVYS a. s., is a mandatory trading scheme participant. **20 tonnes of greenhouse gases (CO<sub>2</sub>)** were discharged by the Reserve Boiler Plant and diesel-generators in 2021. The amount of CO<sub>2</sub> emissions was slightly reduced (20 tonnes compared to 25 tonnes in 2020). The report on the level of operation and the report on greenhouse

## Discharges of radioactive substances into the atmosphere

Only fractions of permitted guidance limit values of exhaust gases are discharged into the environment by the nuclear facilities owned by JAVYS, a. s., as confirmed by multiple monitoring measurements.

### Discharged radioactive aerosols (β, γ) in 2021

| Nuclear facility                     | Vol. activity of discharged substances (Bq) | Annual guidance value (Bq) | % of guidance limit |
|--------------------------------------|---|----------------------------|---------------------|
| Aerosols VK 46A (MBR)                | $2.6 \times 10^6$ Bq                        | $6.58 \times 10^8$ Bq      | 0.40                |
| Aerosols VK 46B (Bitum. Line and OB) | $6.7 \times 10^4$ Bq                        | $1.41 \times 10^8$ Bq      | 0.05                |
| Aerosols VK 808 (BRWTC and OB)       | $2.5 \times 10^5$ Bq                        | $1.41 \times 10^8$ Bq      | 0.18                |
| Aerosols VK 840 (ISFS)*              | $1.8 \times 10^5$ Bq                        | $3.00 \times 10^8$ Bq      | 0.06                |
| Aerosols NPP V1                      | $3.1 \times 10^7$ Bq                        | $8.00 \times 10^{10}$ Bq   | 0.04                |
| Aerosols (FP LRAW)                   | $1.3 \times 10^4$ Bq                        | $8.00 \times 10^7$ Bq      | 0.02                |

No radioactive substances were discharged into the atmosphere from the NRAWR premises, due to the nature of the repository.

gas emissions from the operation in 2021 were redacted in line with requirements defined by Act 414/2012 Coll. on Emission Allowances Trading. In line with the Act, both reports were verified by an accredited verifier (ASTRAIA Certification, s. r. o.). The report on emissions along with the verification report were sent to the District Office in Trnava and to the Ministry of Environment of the Slovak Republic by means of the electronic EU emission system (ETS).

The guidance limit values of discharged radioactive substances were established by decisions of the Public Health Authority of the Slovak Republic, and approved by the Nuclear Regulatory Authority of the Slovak Republic.

\* Shared limit value of  $3 \times 10^8$  Bq applies to all radionuclides produced by ISFS (β, γ included)

**In 2021, substances discharged from JAVYS, a. s. nuclear facilities into the atmosphere were significantly below the authorized guiding limits specified by the Public Health Authority of the Slovak Republic.**

# 3. WATER MANAGEMENT SYSTEM

In the field of water protection, JAVYS, a. s. complies with the basic legal regulation, i.e. Act 364/2004, Coll., on Water, as amended, adopted by the National Council of the Slovak Republic, and with all subsequent related acts, executive ordinances and regulations. The permitted amounts of discharged wastewater, the concentrations and balance limit values of pollutants in the wastewater, places and methods of wastewater discharge, etc., are defined by applicable decisions of state authorities and supervisory bodies in the field of water protection, and issued for JAVYS, a. s.

## Drinking water

Drinking water is supplied to the Jaslovské Bohunice site from the TAVOS, a. s. distribution line, based on a valid drinking water supply contract. The Mochovce nuclear site is connected to the SE, a. s. EMO Plant (SE-EMO) drinking water distribution line. The drinking water supply to the administrative building in Bratislava is provided from the public water mains of Bratislavská vodárenská spoločnosť, a. s. The total consumption of drinking water in 2021 increased by 3.376 m<sup>3</sup> (6,7%) compared to 2020. The increase in the drinking water consumption registered at the Jaslovské Bohunice site was caused by the registered seat being moved to Jaslovské Bohunice as of 17. 2. 2021, and an increased number of contractors' employees present for several projects.

## Amounts of consumed drinking water (2018 - 2021)

| LOCALITY                   | Consumption (m <sup>3</sup> ) |               |               |               |
|----------------------------|-------------------------------|---------------|---------------|---------------|
|                            | 2018                          | 2019          | 2020          | 2021          |
| Jaslovské Bohunice         | 51,157                        | 45,408        | 48,602        | 51,778        |
| NRAWR Mochovce             | 1,160                         | 434           | 397           | 806           |
| FP LRAW Mochovce           | 306                           | 298           | 283           | 256           |
| Office building Bratislava | 1,519                         | 1,150         | 1,180         | 998           |
| <b>SUM TOTAL</b>           | <b>54,142</b>                 | <b>47,290</b> | <b>50,462</b> | <b>53,838</b> |

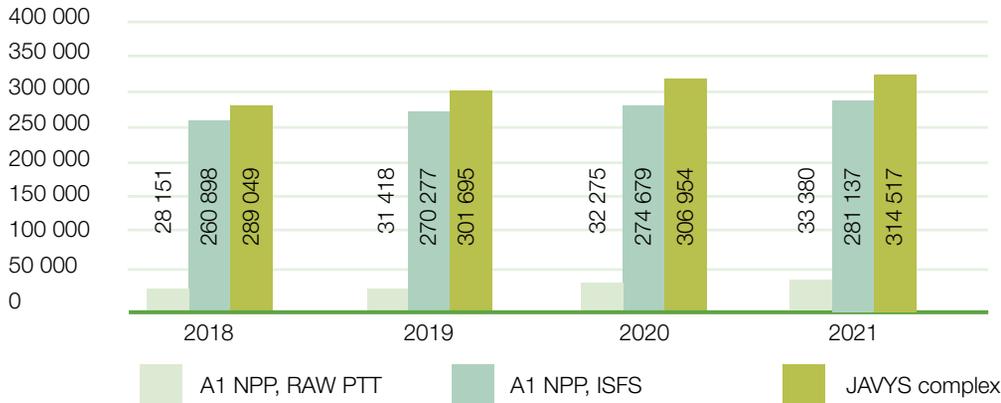
The quality of drinking water was controlled at JAVYS, a. s., in line with Decree 247/2017 Coll. of the Ministry of Health of the Slovak Republic, which specifies details of Drinking Water Quality, Drinking Water Quality Control, Monitoring Programme and Risk Management in relation to the Drinking Water Supply, and pursuant to Decree of the Ministry of Health of the Slovak Republic No. 100/2018, Coll., on Reduction of Population Exposure from Drinking Water, Natural Mineral Water and Spring Water. All tested samples complied with the limit values specified by the Decrees of the Ministry of Health of the Slovak Republic for the evaluated sample indicators.

## Cooling water

Surface water taken from the Sĺřava water reservoir is used as cooling water at the Jaslovské Bohunice site. It is supplied by SE-EBO. The surface water is used for the cooling of the safety and emergency systems at V1 NPP, for the cooling of facilities where radioactive waste is handled and stored, and to cool the storage premises of used nuclear fuel (ISFS).

The amounts of cooling water consumed show a steady trend in both the technology and methods of decommissioning of individual operational systems and civil buildings situated at the A1 and V1 NPP sites.

### Consumed cooling water (supplied from the River Váh) (2018 – 2021) m<sup>3</sup>



The FP LRAW (the bituminization lines and the thickening evaporator) technological facilities are connected to the supply of the non-essential utility water system from the SE-EMO distribution system, i.e. to the cooling water circulation system. The consumption of cooling water reached 1.579 m<sup>3</sup> in 2021.

## Wastewater

### Jaslovské Bohunice site

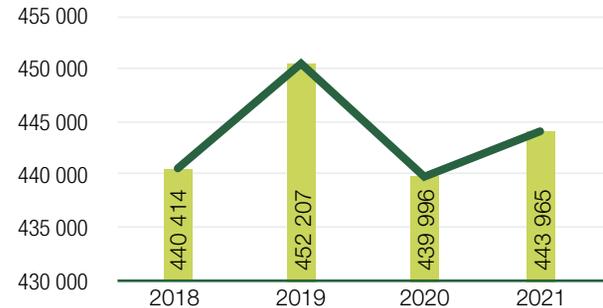
Wastewater from the JAVYS, a. s. site in Jaslovské Bohunice is discharged by a separate sewerage system to the Rivers Váh (water used by technology) and Dudváh (surface drainage water).

#### Amounts of discharged wastewater

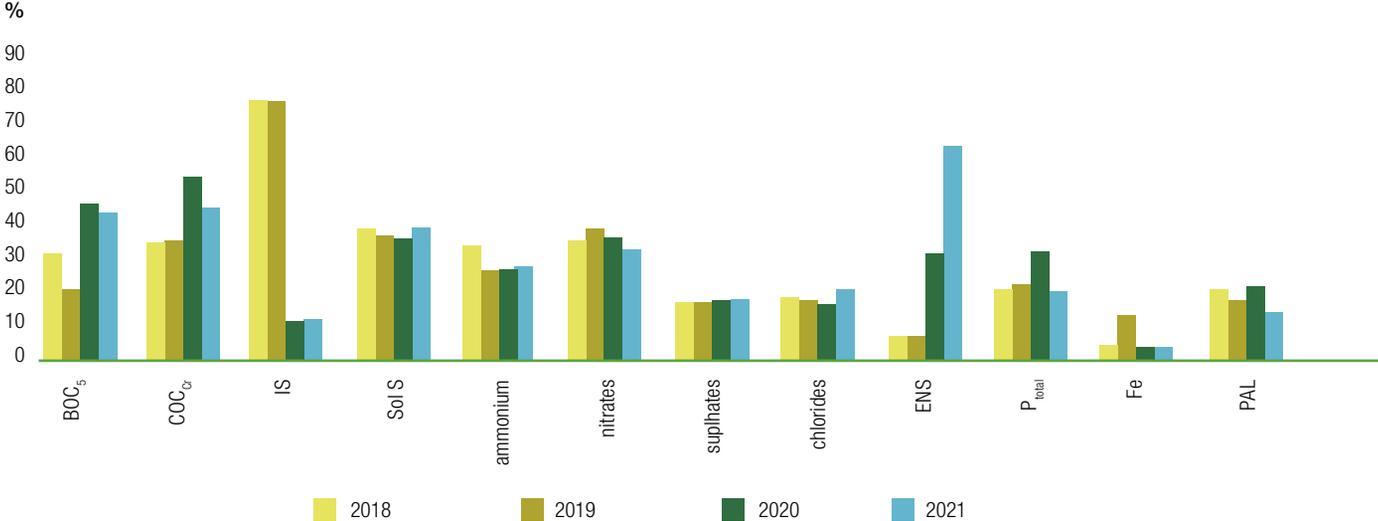
Wastewater from the Jaslovské Bohunice site is discharged via the pipe drainage collector SOCOMAN and the open canal Manivier in line with the applicable decision OU-TT-OSŽP2-2013/00026/GI issued by the District Office in Trnava. In line with this decision in force, JAVYS, a. s. is obliged to measure the amount and quality of rainwater discharged from JAVYS, a. s. into the River Dudváh.

The overall quality assessment of wastewater discharged into the River Váh (recipient) showed lower annual average concentrations and balance values of real contamination, when compared with the limit values specified by Governmental Regulation 755/2004 Coll., which specifies unregulated payments, fees, and details of water charges.

Amounts of wastewater discharged into the River Váh, 2018-2021 (m<sup>3</sup>)



Percentage of Usage Limit of individual contaminants in discharged wastewater (2018 - 2021)



## Average Concentration of Chemical Pollutants Discharged into the River Váh Recipient

| Chemical pollution indicator                      | Average concentration of discharged contaminants | Permitted concentration (decision OU-TT-OS ŽP2-2013/00026/GI) |
|---|--|---|
| Acidity, alkalinity – pH                          | 7.931  | 6 – 9   |
|   | mg/l   | mg/l  |
| Biochemical oxygen consumption - BOC <sub>5</sub> | 3.375  | 8.00  |
| Chemical oxygen consumption - ChOC <sub>Cr</sub>  | 13.072   | 30.00   |
| Insoluble substances - IS                         | 2.285  | 20.00   |
| Soluble substances - SS                           | 380.472  | 1000.00   |
| Ammonia – N-NH <sub>4</sub> <sup>+</sup>          | 1.057  | 4.00  |
| Nitrates – NO <sub>3</sub> <sup>-</sup>           | 15.692   | 50.00   |
| Sulphates – SO <sub>4</sub> <sup>2-</sup>         | 25.635   | 150.00  |
| Chlorides – Cl <sup>-</sup>                       | 19.931   | 100.00  |
| Extracted non-polar substances - NES              | 0.216  | 0.35  |
| Total phosphates – P <sub>TOTAL</sub>             | 0.391  | 2.00  |
| Iron – Fe   | 0.063  | 2.00  |
| Detergents - PAL                                  | 0.067  | 0.50  |

## NRAWR Mochovce site

A rainwater sewage system is installed at the NRAWR site. The system of tanks is emptied into the Telinsky potok stream. Decision OU-NR-OSZP2-2020/043017-003 issued by the District Office in Nitra permitted the discharge of surface drainage water into the Telinsky potok stream. NRAWR discharged 2,270 m<sup>3</sup> surface drainage water into the Telinsky potok stream in 2021. 195 m<sup>3</sup> of sanitary water accumulated in a waterproof cesspool in NRAWR were transported to a wastewater treatment plant for purification.

## FP LRAW Mochovce

Sanitary water from FP LRAW is drained into the SE-EMO sewage system, then taken into the wastewater treatment plant and, after its purification, discharged into the environment with SE-EMO water. The rainwater is drained into the SE-EMO rainwater sewage system along with rainfall water from other SE-EMO civil buildings. The sanitary water and rainwater is drained by Slovenské elektrárne, a. s.

## Discharges of radioactive substances into the hydrosphere

Only fractions of permitted limit values of discharged liquids are discharged into the environment by the nuclear facilities owned by JAVYS, a. s., as confirmed by multiple monitoring measurements.

The guidance limit values of radioactive substances discharged into surface water by nuclear facilities of JAVYS, a.s. were established by decisions of the Public Health Authority of the Slovak Republic, and approved by the Nuclear Regulatory Authority of the Slovak Republic.

The substances discharged in wastewater are monitored by measuring the volumes of tritium, corrosion and fission products, and the volume of water stored in retention tanks at RAW PTT, A1 NPP, ISFS and V1 NPP, while water discharges are also continuously monitored at measurement points. Water with low values of contaminants also includes water discharged due to the standard operation of the groundwater pumping system from well N-3 (BO 106) permitted by the District Office in Trnava in line with Act 364/2004, Coll. on Water.

### Low-level Water Discharge from the Jaslovské Bohunice Site (including water pumped from the recovery pumps at the RAW PTT and A1 NPP Sites) into the River Váh

| 2021                       | Activities of radionuclides in wastewater of the River Váh recipient |               |                          |                         |                           |               |                           |                          |
|----------------------------|--|---------------|--------------------------|-------------------------|---------------------------|---------------|---------------------------|--------------------------|
|                            | NP, V1 NPP, ISFS   |               |                          |                         | NP, A1 NPP, RAW PTT       |               |                           |                          |
| Volume of discharged water | 9,082 m <sup>3</sup>   |               |                          |                         | 188,366 m <sup>3</sup>    |               |                           |                          |
|                            | Corr. & fiss. prod. (MBq)  | Tritium (GBq) | % of CFP guidance limit* | % of 3H guidance limit* | Corr. & fiss. prod. (MBq) | Tritium (GBq) | % of CFP guidance limit** | % of 3H guidance limit** |
| <b>SUM TOTAL</b>           | 7.579  | 10.371        | 0.058                    | 0.519                   | 13.770                    | 106.192       | 0.115                     | 1.062                    |

\* CFP guidance limit: 13,000 Mbq; Tritium guidance limit: 2,000 GBq

\*\*CFP guidance limit: 12,000 Mbq; Tritium guidance limit: 10,000 GBq

Low-level water was not discharged into the River Dudváh in 2021.

### Water Actively Discharged into the Hydrosphere from NRAWR and FP LRAW

Surface drainage water is only discharged from NRAWR into the Telinský potok stream. 2,270m<sup>3</sup> was discharged in 2021, with di-

sintegration activity  $3.0 \times 10^5$  Bq.

Limits of volumetric activities of radionuclides in discharged water specified by the decision of the Chief Public Health Officer were not exceeded for any of the indicators monitored in this period.

## Quality of rainfall wastewater discharged from NRAWR

| Radionuclide   | Guidance limit (Bq/year) | Disintegration activity in discharged water (Bq) | % of guidance limit |
|----------------|--------------------------|--|---------------------|
| <sup>3</sup> H | 1.88x10 <sup>10</sup>    | 5.68x10 <sup>6</sup>                             | 0.030               |
| Cs-137         | 2.28x10 <sup>7</sup>     | 4.00x10 <sup>4</sup>                             | 0.175               |
| Co-60          | 2.24x10 <sup>7</sup>     | 2.00x10 <sup>4</sup>                             | 0.089               |
| Sr-90          | 2.44x10 <sup>9</sup>     | 2.30x10 <sup>5</sup>                             | 0.094               |
| Pu-239         | 5.56x10 <sup>5</sup>     | 1.50x10 <sup>4</sup>                             | 2.679               |

Secondary active wastewater was not discharged from the FP LRAW facility in 2021.

## Groundwater monitoring and protection

### Jaslovské Bohunice site

The monitoring and protection of groundwater and soil waters at the Jaslovské Bohunice site and in its surroundings have been carried out since 1997 in accordance with the approved monitoring programme. Long-term and regularly monitored radiation in ground water at RAW PTT and A1 NPP is currently stable. Continuously working recovery pumps on-site have been in operation since 2000.

Activities are carried out under the A1 NPP decommissioning project, based on which primary sources of soil contamination, followed by sources of groundwater contamination, were gradually removed. Recovery pumps are operated in compliance with the MoE SR decision in force.

## Evaluation of the Standard Operation of the Groundwater Recovery Pumps, Well N-3

| Recovery pumping in 2021 | Reached CFP activity [MBq] | [%] of CFP guidance limit* | Reached tritium activity [GBq] | [%] of <sup>3</sup> H guidance limit* | Volume of pumped water [m <sup>3</sup> ] |
|--------------------------|----------------------------|----------------------------|--------------------------------|---------------------------------------|--|
| <b>SUM TOTAL</b>         | 1.69                       | 0.014                      | 82.85                          | 0.828                                 | 184,844                                  |

\*Guidance limits are specified by decision as follows:

- CFP guidance limit = 1.2x10<sup>4</sup> MBq,
- <sup>3</sup>H guidance limit = 1.0x10<sup>4</sup> GBq.

In addition to the monitoring within the company's site, the surroundings are monitored as well. Based on the groundwater monitoring results in the surroundings of the Jaslovské Bohunice site, it is possible to observe a significant reduction of radiation (reduced tritium volumetric activities to an insignificant level at the natural level) in the surroundings of municipalities Malženice and Žilkovce.

## NRAWR Mochovce site

Within and nearby NRAWR, groundwater samples were collected from monitoring wells in line with the monitoring calendar 2021, for the purpose of chemical and radiochemical analyses.

Apart from ground water, drainage water is also monitored at NRAWR. The volumetric activity of the individual radionuclides in 2021 was below the limit specified by the Chief Health Officer of the Slovak Republic. Drainage water is discharged through rainwater tanks. Its amount and analyses are included in data on discharged water.

### Results of Chemical and Radiochemical Analyses of Water in 2021

| Measured quantity   | Activity limit (Bq/l) |
|---------------------|-----------------------|
| $^3\text{H}$        | < 5                   |
| Total beta activity | < 1                   |
| $^{137}\text{Cs}$   | < 1.27                |
| $^{60}\text{Co}$    | < 0.87                |
| $^{90}\text{Sr}$    | < 0.15                |
| $^{239}\text{Pu}$   | < 0.01                |

The results of radiochemical analyses reached the level of normal potential values; the environment was not negatively impacted at NRAWR and its surroundings during operation.



## 4. WASTE MANAGEMENT SYSTEM (NON-ACTIVE WASTE)

In the field of waste management, JAVYS, a. s. complied in 2021 with the basic legal regulation, i.e. Act 79/2015, Coll., on Waste, as amended, adopted by the National Council of the Slovak Republic, and with all subsequent related acts, executive ordinances and regulations of the Government of the Slovak Republic.

JAVYS, a. s. provides waste management by the collection, sorting and accumulation of waste within the premises allocated for such purpose - the Waste Collection Yard.

### Bohunice site

#### Balance of Waste Produced from Projects co-financed by the EU

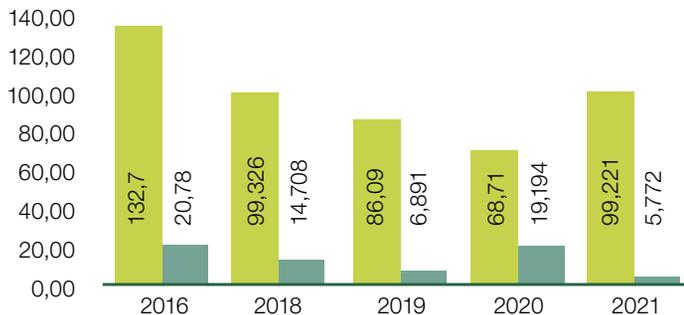
Disposal and recovery of waste produced by activities not implemented by projects co-financed by the EU fall under the competence of JAVYS, a. s. If such activities are provided, the disposal and recovery of such waste is ensured by a contracted supplier.

**Amount and type of waste (category “other”) produced by JAVYS, a. s. in 2021, within projects not financed by the EU in the locality of Jaslovské Bohunice**

| Catalogue number        | Type of waste | Other waste - name                                  | Amount (tonnes) | Recovered waste (tonnes) | Disposed waste (tonnes) |
|-------------------------|---------------|---|-----------------|--------------------------|-------------------------|
| 150101                  | O             | Paper and cardboard packaging                       | 11.906          | ✓                        |                         |
| 150102                  | O             | Plastic packaging - PET bottles                     | 2.695           | ✓                        |                         |
| 150106                  | O             | Mixed packaging                                     | 1.220           | ✓                        |                         |
| 160214                  | O             | Discarded equipment not listed under 160209- 160213 | 6.120           | ✓                        |                         |
| 170,201                 | O             | Wood  | 6.180           | ✓                        |                         |
| 170604                  | O             | Insulation materials not listed under 170601-03     | 71.100          |                          | ✓                       |
| <b>Total amount</b>     |               |   | <b>99.221</b>   | <b>28.121</b>            | <b>71.100</b>           |
| <b>Total amount (%)</b> |               |   | <b>100%</b>     | <b>28.34%</b>            | <b>71.66%</b>           |

**Amount and type of hazardous waste produced by JAVYS, a. s. in 2021,  
within projects not financed by the EU in the locality of Jaslovské Bohunice**

| Catalogue number        | Type of waste | Hazardous waste - name   | Amount (tonnes) | Recovered waste (tonnes) | Disposed waste (tonnes) |
|-------------------------|---------------|--|-----------------|--------------------------|-------------------------|
| 090104                  | H (Hazardous) | Fixing agent solutions   | 0.260           |                          | ✓                       |
| 130208                  | H (Hazardous) | Other engine, gear and lubricating oils  | 0.080           | ✓                        |                         |
| 191206                  | H (Hazardous) | Wood containing hazardous substances   | 0.140           |                          | ✓                       |
| 150110                  | H (Hazardous) | Packaging containing residues of or contaminated by hazardous substances                             | 0.660           |                          | ✓                       |
| 150202                  | H (Hazardous) | Absorbents, filters (oil filters included), cloths used to clean contaminated hazardous substances   | 0.100           |                          | ✓                       |
| 160213                  | H (Hazardous) | Discarded equipment containing parts made of hazardous materials - not listed under 160209 to 160212 | 0.720           | ✓                        |                         |
| 160506                  | H (Hazardous) | Laboratory chemicals which consist of/contain hazardous substances                                   | 0.140           |                          | ✓                       |
| 160601                  | H (Hazardous) | Lead-acid batteries  | 3.252           | ✓                        |                         |
| 080317                  | H (Hazardous) | Used printer cartridges containing hazardous substances  | 0.120           |                          | ✓                       |
| 200121                  | H (Hazardous) | Fluorescent tubes and other mercury-containing waste   | 0.300           | ✓                        |                         |
| <b>Total amount</b>     |               |  | <b>5.772</b>    | <b>4.352</b>             | <b>1.420</b>            |
| <b>Total amount (%)</b> |               |  | <b>100%</b>     | <b>75.40%</b>            | <b>24.60%</b>           |



**Other and hazardous waste produced at the  
Jaslovské Bohunice site, unrelated to projects  
co-financed by the EU (2018 - 2021)**

■ other (t)  
■ hazardous (t)

## Mochovce site

Other, hazardous and municipal waste is removed and disposed of from the Mochovce site based on the SE-EMO supply and service agreement. Construction and demolition waste was produced

when site equipment was removed at NRAWR (constructed by suppliers).

| Catalogue number             | Type of waste | Other waste - name                       | Amount (tonnes) | Recovered waste | Disposed waste |
|------------------------------|---------------|--|-----------------|-----------------|----------------|
| 200301                       | ○             | Mixed municipal waste                    | 3.35            |                 | ✓              |
| 170904                       | ○             | Mixed construction and demolition wastes | 126.04          |                 | ✓              |
| <b>Total amount (tonnes)</b> |               |  | <b>129.39</b>   | <b>0</b>        | <b>129.39</b>  |
| <b>Total amount (%)</b>      |               |  | <b>100%</b>     | <b>0</b>        | <b>100%</b>    |

| Catalogue number             | Type of waste | Hazardous waste - name   | Amount (tonnes) | Recovered waste | Disposed waste |
|------------------------------|---------------|--|-----------------|-----------------|----------------|
| 160602                       | H (Hazardous) | Nickel-cadmium batteries   | 0.03            | ✓               |                |
| 150110                       | H (Hazardous) | Packaging containing residues of or contaminated by hazardous substances | 0.06            |                 | ✓              |
| 190304                       | H (Hazardous) | Wastes marked as hazardous, partly stabilized                            | 6.96            |                 | ✓              |
| <b>Total amount (tonnes)</b> |               |  | <b>7.05</b>     | <b>0.03</b>     | <b>7.02</b>    |
| <b>Total amount (%)</b>      |               |  | <b>100%</b>     | <b>0.43%</b>    | <b>99.57%</b>  |

## Balance of Waste Produced within Projects co-financed by the EU

Waste was produced by JAVYS, a. s. in 2021 during Stage 2 of V1 NPP decommissioning, and recovered and disposed of by contrac-

tors and sub-contractors engaged in the individual projects.

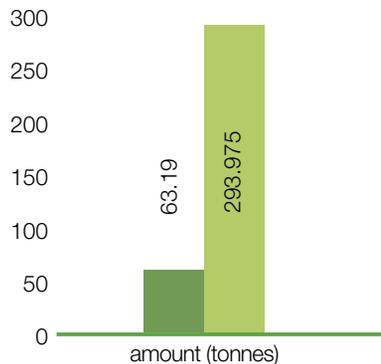
### Amount and type of waste (category “other” and “hazardous”) produced by JAVYS, a. s. in 2021, within projects financed by the EU

| Catalogue number             | Type of waste | Other waste - name                         | Amount (tonnes) | Recovered waste | Disposed waste |
|------------------------------|---------------|--|-----------------|-----------------|----------------|
| 070213                       | O             | Waste plastic - BIDSF Project A5-A2a       | 0.02            |                 | ✓              |
| 160214                       | O             | Discarded equipment - BIDSF Project A5-A2a | 0.09            | ✓               |                |
| 170203                       | O             | Plastic - BIDSF Project A5-A3              | 15.96           |                 | ✓              |
| 170203                       | O             | Plastic - BIDSF Project A5-A2a             | 7.54            |                 | ✓              |
| 170302                       | O             | Bituminous mixtures - BIDSF Project D4.1   | 39.58           |                 | ✓              |
| <b>Total amount (tonnes)</b> |               |  | <b>63.19</b>    | <b>0.09</b>     | <b>63.10</b>   |
| <b>Total amount (%)</b>      |               |  | <b>100%</b>     | <b>0.14%</b>    | <b>99.86%</b>  |

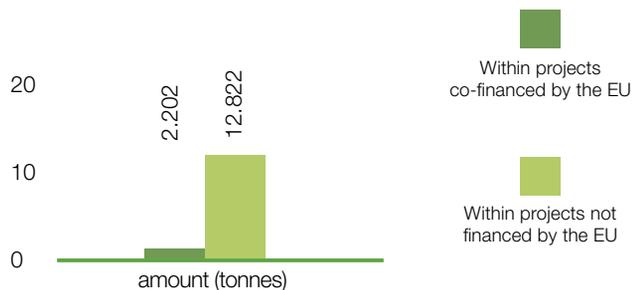
| Catalogue number             | Type of waste    | Hazardous waste - name  | Amount (tonnes) | Recovered waste | Disposed waste |
|------------------------------|------------------|---|-----------------|-----------------|----------------|
| 160213                       | H<br>(Hazardous) | Discarded equipment - BIDSF Project A5-A2a                        | 0.002           |                 | ✓              |
| 190304                       | H<br>(Hazardous) | Waste marked as hazardous, partly stabilized - BIDSF Project D4.2 | 2.200           |                 | ✓              |
| <b>Total amount (tonnes)</b> |                  |   | <b>2.202</b>    | <b>0</b>        | <b>2.202</b>   |
| <b>Total amount (%)</b>      |                  |   | <b>100%</b>     | <b>0%</b>       | <b>100%</b>    |

## Comparison of the amount of other and hazardous waste produced within projects co-financed by the EU, and by in-house production

Compared production in 2021  
– other waste



Compared production in 2021  
– hazardous waste



## Balance of Municipal and Biodegradable Waste

Amount of municipal and biodegradable waste produced by JAVYS, a. s. in 2021, in the locality of Jaslovské Bohunice

| Catalogue number             | Type of waste | Waste name            | Amount (tonnes) | Recovered waste | Disposed waste |
|------------------------------|---------------|-----------------------|-----------------|-----------------|----------------|
| 200301                       | ○             | Mixed municipal waste | 31.984          |                 | ✓              |
| 200201                       | ○             | Biodegradable Waste   | 3.380           | ✓               |                |
| <b>Total amount (tonnes)</b> |               |                       | <b>35.364</b>   | <b>3.380</b>    | <b>31.984</b>  |
| <b>Total amount (%)</b>      |               |                       | <b>100%</b>     | <b>9.56%</b>    | <b>90.44%</b>  |

## 5. MAJOR INDUSTRIAL ACCIDENTS

Within the prevention of major industrial accidents, JAVYS, a. s. complies with the basic legal regulation, i.e. Act 128/2015, Coll., on Prevention of Major Industrial Accidents, and on amendments and supplements to certain Acts, as amended, adopted by the National Council of the Slovak Republic, and with all (in)directly related acts. Despite the fact that JAVYS, a. s. is neither in Category A nor in Category B specified by the Act, the company is obliged to regularly monitor quantities, fire characteristics and types of hazardous substances within its premises. The “Management of Chemical

Substances” (MCHS) application is used to monitor hazardous chemicals management. The application includes a code list of all chemical substances and mixtures purchased and used within and brought into JAVYS, a. s. by contractors and tenants. The chemicals are classified into categories in line with the Chemical Act, the Water Act, and the Act on Prevention of Major Industrial Accidents, including the Safety Data Sheet for each chemical for employees’ convenience.



## 6. ENVIRONMENTAL IMPACT ASSESSMENT



The environmental impact assessment is governed by Act 24/2006 Coll. on Environmental Impact Assessment, and on amendments and supplements to certain Acts, as amended, adopted by the National Council of the Slovak Republic. The provisions of the Act were implemented into Procedure BZ/OŽ/SM-04 Environmental impact assessment (EIA).

### Environmental impact assessment processes

#### Screening procedure

In 2021, the screening procedure to approve the following change to the investment activity was performed: ***Reconstruction of the chemical water treatment process to obtain demineralized service water.***

#### Compulsory assessment

In 2021, the mandatory assessment proceeding continued in compliance with Act 24/2006, Coll., for the ***Optimization of Processing Capacities of JAVYS, a. s., Radioactive Waste Processing and Treatment Technologies at the Jaslovské Bohunice site*** with the Ministry of Environment of the Slovak Republic issuing its approval of the investment activity. A remonstrance was filed to this final decision, and the case file was transferred to the Appellate Body at the Ministry of Environment SR. The latter means the EIA process was not concluded in 2021.

## **Activities performed during the authorization process**

1. The implementation and operation of activities that were assessed in compliance with the Environmental Impact Assessment Act are conditioned by a proven compliance with the Final Decision in the EIA proceedings, or with the decision issued during the screening procedure. Such compliance is proven by means of a written evaluation of the conditions stipulated in the final decision by MoE SR, or the conditions specified in the decision issued during the screening procedure. The results of the evaluation must be enclosed with the permit request. In 2021, the compliance with conditions stipulated in the final permits was evaluated for the BIDSF project D4.1 and investment actions Changed use of object 760-II.3,4,5:V1 – storage of metallic materials with contaminated surface within the project Reconstruction and relocation of technology to object 760-II.3,4,5:V1, and I00TSVD2004 Optimization of radioactive waste incineration capacities.

In all its final decisions, the Ministry of Environment SR confirmed the compliance of approval procedures with Act 24/2006 Coll., and the decision issued thereunder.

## **Post-project analysis**

In the first half of 2021, a post-project analysis for 2020 was developed for all evaluated activities performed by JAVYS, a. s. The results of the post-project analysis and evaluated compliance with the conditions specified by the MoE SR in its Final Decisions showed that JAVYS, a. s. performed all reviewed activities in compliance with the Environmental Impact Assessment Act, and with decisions issued in compliance with the Act.

## 7. ENVIRONMENTAL MANAGEMENT SYSTEM

JAVYS, a. s. adheres to the certified environmental management system in accordance with the ISO standard 14001:2015 Environmental Management Systems, to demonstrate it undertook all its activities in 2021 in compliance with the environmental protection requirements.

The functionality and implementation of this system was verified by an independent certification body, Det Norske Veritas GL, on 8.11.-12.11.2021, by a recertification IMS audit confirming the validity of internationally acceptable certificates for JAVYS, a. s.

The environmental protection requirements are regularly monitored and reviewed by internal IMS audits which also verify the implementation of environmental management system requirements. The audits concluded with minor findings which were remedied within deadlines recommended in IMS audit reports. The audits did not report any non-conformities.



## ABBREVIATIONS

|                         |  |                           |  |
|-------------------------|--|---------------------------|--|
| $^3\text{H}$            | Tritium  | ISFS                      | Interim Spent Fuel Storage   |
| AP                      | Air pollutant  | JAVYS, a. s.              | Jadrová a vyradovacia spoločnosť, a joint stock company              |
| As                      | Arsenic  | MBq                       | Megabecquerel  |
| BIDSF                   | Bohunice International Decommissioning Support Fund - V1 NPP | MH SR                     | Ministry of Health of the Slovak Republic                            |
| Bq                      | Becquerel  | Mn                        | Manganese  |
| BRWTC                   | Bohunice Radioactive Waste Treatment Centre                  | MoE SR                    | Ministry of Environment of the Slovak Republic                       |
| Cd                      | Cadmium  | MRB                       | Main reactor building  |
| CFP                     | Corrosion and fission products                               | NF                        | Nuclear facility   |
| CO                      | Carbon monoxide  | Ni                        | Nickel   |
| Co                      | Cobalt   | $\text{NO}_x$             | Oxides of nitrogen   |
| $\text{CO}_2$           | Carbon dioxide   | NRAWR                     | National Radioactive Waste Repository                                |
| $\text{C}_{\text{org}}$ | Organic carbon   | Pb                        | Lead   |
| Cr                      | Chrome   | $\text{P}_{\text{Total}}$ | Total phosphate  |
| Cs                      | Caesium  | Pu                        | Plutonium  |
| Cu                      | Copper   | RAW                       | Radioactive waste  |
| DG                      | Diesel generator   | RAW PTT                   | Radioactive waste processing and treatment technology                |
| DO                      | District office  | RBP                       | Reserve boiler plant   |
| EIA                     | Environmental impact assessment                              | SE-EBO                    | Slovenské elektrárne, a. s., Atómové elektrárne Bohunice power plant |
| Env                     | Environment  | SE-EMO                    | Slovenské elektrárne, a. s., Atómové elektrárne Mochovce power plant |
| ETS                     | Emission Trading System                                      | SNF                       | Spent nuclear fuel   |
| EU                      | European Union   | SO                        | Civil building   |
| FCC                     | Fibre concrete container                                     | $\text{SO}_2$             | Sulphur dioxide  |
| FCCP                    | Fibre concrete container production                          | SP                        | Solid pollutants   |
| FP LRAW                 | Final processing of liquid radioactive waste                 | Sr                        | Strontium  |
| GBq                     | Gigabecquerel  | TAVOS, a.s.               | Trnavská vodárenská spoločnosť, a.s.                                 |
| HCl                     | Hydrogen chloride  | Tl                        | Tellurium  |
| HF                      | Hydrogen fluoride  | VS                        | Ventilation stack  |
| Hg                      | Mercury  |                           |  |
| HP                      | Hazardous parts  |                           |  |
| HS                      | Hazardous substance  |                           |  |
| IMS                     | Integrated management system                                 |                           |  |



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