



REPORT ON THE IMPACT
OF JAVYS, A. S.

OPERATION
ON THE
ENVIRONMENT

FOR THE YEAR
2015

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INTRODUCTION

Report on the environment for the year 2015 provides comprehensive information on the protection of air, water and waste management, the prevention of major industrial accidents, the treatment of chemicals, processes for the environmental impact assessment (EIA) and environmental protection activities JAVYS, a.s.

The goal and mission to perform all activities with regard to environmental protection are demonstrated by maintaining a certified environmental management system of JAVYS, a.s., according to the standard ISO 14001:2004 Environmental Management Systems.

In the performance of all the activities we put an emphasis on the observance of legal requirements identified from the legislation of the SR and EU in each of the environmental protection areas, as well as the obligation to comply with the limits and conditions of the decisions of the national supervisory authorities for the protection of individual environmental elements.

Environmental protection falls within the framework of an integrated management system under the safety process.



AIR PROTECTION

In the field of air protection, JAVYS, a.s. complies with the basic legal regulation, which is the Act of the National Council of the Slovak Republic No. 137/2010 on air, as amended, and all subsequent laws, executive orders and regulation of the SR Government.

The method of operation for air pollution sources, from the permissions of the source, determination of the emission monitoring system, to the determination of the limits of discharged pollutants into the air, is governed by a valid decision of the government and the supervisory authorities in the field of air protection issued for JAVYS, a.s.

SOURCES OF AIR POLLUTION

JAVYS, A.S. IS AN OPERATOR OF AIR POLLUTION SOURCES IN THE CATEGORIES – LARGE, MEDIUM, SMALL.

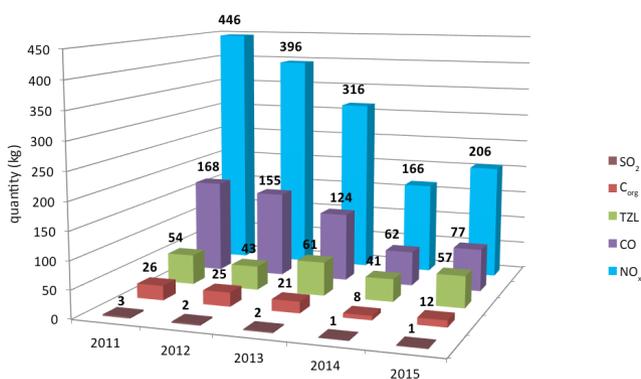
Start-up and reserve boiler room (SuRBR)	large resource
LOOS boiler in the SuRBR objects	medium source
Gas infra-red heaters in the building of the Trnava FCC production plant	medium source
Diesel generator in the V1 pumping station	medium source
Diesel generator next to the A1 outdoor substantiation	medium source
Diesel generator in the V1 sub-station (2 pcs)	medium source
Diesel generator in the Trnava FCC production plant	small source
Diesel generator at the ISFS	small source
Gas appliances (boilers) in Trnava FCC production plant	small source
Production of fibre concrete mixture in Trnava FCC production plant	small source

THE QUANTITIES OF EMISSIONS DISCHARGED FROM EACH OF THE SOURCES IN 2015

The source of pollution	Fuel	The number of operational hours	The quantity of the pollutant (kg)				
	natural gas (m ³)	hrs/year	PM	SO ₂	NO _x	CO	C _{org}
SuRBR	24,889	26	1.892	0.227	41.614	13.950	1.773
boiler LOOS	536	3	0.041	0.005	0.794	0.321	0.053
gas infra-red heaters	89,337	1,245	6.790	0.815	132.397	53.468	8.911
gas appliances (FCCP)	10,719	149	0.815	0.098	15.886	6.415	1.069
	diesel (t)	hrs/year	PM	SO ₂	NO _x	CO	C _{org}
DG Caterpillar Olympian	0.693	13	0.984	0.014	3.465	0.554	0.076
DG Martin Power MP 1700	1.008	5	1.431	0.020	5.040	0.806	0.111
DG Martin Power MP 400 – 2 pcs	0.218	3	0.310	0.004	1.092	0.175	0.024
DG Caterpillar 3306	0.940	11	1.335	0.019	4.700	0.752	0.107
DG in FCCP	0.189	5.5	0.268	0.004	0.945	0.151	0.003
Production of FCM	-	-	43.170	-	-	-	-
Together P from all SAP (kg)			57.038	1.205	205.933	76.593	12.146

All of these diesel generators are not permanently in operation, serving as an emergency source of electrical power. Permit to operate production of fibre concrete mixture issued by the Municipal Office in Trnava on 10 March 2010. 502 fibre concrete containers were produced in 2015, i.e. 2,158.6 t fibre concrete mixture, representing air pollution by the particulate matter of 0.0432 t.

Trends of pollutants released into the atmosphere from JAVYS, a. s. air pollution sources in the 2011 – 2015 period



The quantities of emissions discharged from the gas boiler room 740-IX.1 for 2015

Fuel	Pollutant (kg)				
natural gas (m ³)	PM	SO ₂	NO _x	CO	C _{org}
47,184	3.586	0.43	69.927	28.24	4.707

The owner and operator of the 740-IX.1 gas boiler room is the company JESS. It falls under the secondary sources of air pollution. The operation of the gas boiler room was completed by 30 October 2015.

The quantities of pollutants discharged from the BRWTC incinerator in the 2011 – 2015 period

Pollutant (kg)	2015	2014	2013	2012	2011
HCl	1.740	9.520	0.550	23.840	0.540
HF	2.230	1.510	0.570	0.820	0.113
Hg + Tl + Cd	0.227	0.128	0.069	0.054	0.034
As+Ni+Cr+Co	1.053	0.616	0.372	0.290	0.330
Pb+Cu+Mn	0.903	0.523	0.307	0.240	0.205
SO ₂	46.73	150.320	29.360	107.000	4.050
NO _x	456.45	362.370	247.500	62.930	676.660
CO	79.84	64.930	35.730	17.170	57.930
PM	1.38	3.320	4.890	3.550	5.610
C _{org}	12.76	6.760	6.890	11.000	12.470
operating hours/year	5,659	3,796	3,251	2,671	4,851

The BRWTC incinerator does not fall under the Clean Air Act and is not considered to be a source of air pollution. The incinerator is classified as a nuclear facility and state supervision is carried out by the NRA SR.

EQUIPMENT CONTAINING FLUORINATED GREENHOUSE GASES

Data on equipment containing fluorinated greenhouse gases listed in the table have been notified for DO Bratislava and DO Trnava. The terms of operation within the meaning of Act No. 286/2009 on fluorinated greenhouse gases and regulation of the European Parliament and the Council (EC) No. 517/2014 on fluorinated greenhouse gases apply to them.

Equipment with the contents of the fluorinated greenhouse gases with a volume of 5 or more tons equivalent of CO₂ in the Jaslovské Bohunice location and in the production plant of fibre concrete containers in Trnava

Object	Equipment	Filling	Volume Gas F (kg)	Gas volume F (t equivalent of CO ₂)
Outdoor switchrooms A1	2 compact substations 110 kV	SF ₆	2 x 93	2 x 2120.4
Outdoor switchrooms A1	6 measuring current transformers	SF ₆	6 x 4	6 x 91.2
Outdoor switchrooms A1	6 measuring voltage transformers	SF ₆	6 x 4.4	6 x 100.32
Outdoor switchrooms V1	4 6kV switchboards	SF ₆	4 x 5.21	4 x 118.79
Outdoor switchrooms V1	2 6kV switchboards	SF ₆	2 x 7.15	2 x 163.02
Outdoor switchrooms V1	1 6kV switchboard	SF ₆	4.64	105.79
Outdoor switchrooms V1	1 ALSTOM AEA 01 switch	SF ₆	8.3	189.24
Outdoor switchrooms V1	2 pcs of EAE 10 cased VHC switch room - HYPACT	SF ₆	2 x 35.9	2 x 818.52
Outdoor switchrooms V1	4 pcs of AEA 02 Siemens switch	SF ₆	4 x 7.6	4 x 173.28
Outdoor switchrooms V1	26 switchboards 6kV	SF ₆	26 x 1.13	26 x 25.76
Outdoor switchrooms V1	7 GIS 6kV	SF ₆	7 x 2.55	7 x 58.14
Outdoor switchrooms V1	1 6kV switchboard	SF ₆	2.36	53.81
Outdoor switchrooms V1	5 6kV switchboards	SF ₆	5 x 1.39	5 x 31.69
Outdoor switchrooms V1	1 6kV switchboard	SF ₆	1.8	41.04
Outdoor switchrooms V1	2 6kV switchboards	SF ₆	2 x 1.2	2 x 27.36
Outdoor switchrooms V1	1 6kV switchboard	SF ₆	1.6	36.48
Outdoor switchrooms V1	2 6kV switchboards	SF ₆	2 x 1.3	2 x 29.64
Outdoor switchrooms V1	1 switchboard 22kV	SF ₆	1.02	23.26

Object	Equipment	Filling	Volume Gas F (kg)	Gas volume F (t equivalent of CO ₂)
Outdoor switchrooms V1	1 switchboard 22kV	SF ₆	1.34	30.55
Outdoor switchrooms V1	5 Siemens AEA switches	SF ₆	5 x 2.5	5 x 57
Pumping station V1	2 switchboards r6-16.05	SF ₆	2 x 0.6	2 x 13.68
Pumping station V1	2 switchboards r6-16.05	SF ₆	2 x 1.1	2 x 25.08
Pumping station V1	5 switchboards r6-16.05	SF ₆	5 x 0.9	5 x 20.52
Pumping station V1	2 switchboards r6-16.05	SF ₆	2 x 1.2	2 x 27.36
Pumping station V1	2 switchboards r6-16.05	SF ₆	2 x 0.7	2 x 15.96
Intermediate engine house A1	1 MITSUBISHI air conditioning unit	R 410A	3.5	7.31
Engine room A1	1 PANASONIC air conditioning unit	R 410A	2.64	5.51
Active water pumping station	2 DAIKIN air conditioning units	R 410A	2 x 2.4	2 x 5.01
Administrative building A1	2 MITSUBISHI air conditioning units	R 410A	2 x 23	2 x 48.02
Administrative building A1	1 MITSUBISHI air conditioning unit	R 410A	26	54.29
Administrative building A1	1 MITSUBISHI air conditioning unit	R 410A	22	45.94
Administrative building A1	1 MITSUBISHI air conditioning unit	R 410A	23	48.02
Administrative building A1	1 PANASONIC air conditioning unit	R 410A	3.4	7.1
Administrative building A1	1 PANASONIC air conditioning unit	R 410A	3.4	7.1
Administrative building A1	1 LG air conditioning unit	R 410A	7.55	15.76
The health center	1 TOSHIBA air conditioning unit	R 410A	2.4	5.01
Administrative building VUJE	1 TOSHIBA air conditioning unit	R 410A	18	37.58
SuRBR V1	1 TOSHIBA air conditioning unit	R 410A	2.4	5.01
Substation V1	1 MITSUBISHI air conditioning unit	R 410A	5.8	12.11
Administrative building V1	4 LG Split units	R 410A	4 x 7.55	4 x 15.76
Administrative building V1	2 LG air conditioning units	R 410A	2 x 2.9	2 x 6.06
Archive V1	1 LENNOX cooling unit	R 410A	27	56.38
The object of physical protection	5 TOSHIBA air conditioning units	R 410A	5 x 2.4	5 x 5.01
BRWTC	2 CARRIER air conditioning units	R 407C	2 x 29	2 x 51.45
FCCP Trnava	1 TOSHIBA air conditioning unit	R 410A	2.4	5.01

Equipment containing fluorinated greenhouse gases with a capacity of 5 or more tons of CO₂ equivalent in the Bratislava location

Object	Equipment	Filling	Volume Gas F (kg)	Gas volume F (t equivalent of CO ₂)
AC Bratislava	1 TOSHIBA air conditioning unit	R 410A	11	22.97
AC Bratislava	1 DAIKIN cooling unit	R 410A	9.6	20.04
AC Bratislava	2 LG air conditioning units	R 410A	2 x 2.5	2 x 5.22
AC Bratislava	1 YORK cooling unit	R 407C	22	39.03
AC Bratislava	2 pcs of DAIKIN VRV system	R 407C	2 x 11.2	2 x 19.87
AC Bratislava	1 pc of DAIKIN VRV system	R 407C	11.8	20.93
AC Bratislava	1 pc of DAIKIN VRV system	R 407C	6.3	11.18
AC Bratislava	1 pc of DAIKIN VRV system	R 407C	6.4	11.35

Equipment containing fluorinated greenhouse gases with a capacity of 5 or more tons of CO₂ equivalent in Jaslovské Bohunice location - equipment owned by JESS

Object	Equipment	Filling	Volume Gas F (kg)	Gas volume F (t equivalent of CO ₂)
The health center	1 MITSUBISHI air conditioning unit	R 410A	8.5	17.75
Administrative building of JESS	4 YORK cooling units	R 410A	4 x 23	4 x 48.02
Administrative building of JESS	2 YORK cooling units	R 410A	2 x 2.9	2 x 6.06
JESS dining room,	1 CARRIER cooling unit	R 410A	20.65	43.12
Administrative building of JESS	1 YORK cooling unit	R 407C	15	26.61

GREENHOUSE GAS EMISSIONS

In the meaning of Act No. 414/2012 on emission trading, JAVYS, a.s., is a mandatory trading scheme participant. In 2015, 59 t of greenhouse gases (CO₂) were discharged into the air from the operation.

A report on greenhouse gas emissions from operation for the year 2015 was drawn up and verified by an accredited verifier based on a valid order under the law. The emission report with the verification report was sent to Trnava DO and the ME SR.

DISCHARGES OF RADIOACTIVE SUBSTANCES INTO THE ATMOSPHERE

After multiple control measurements, only a small percentage of the authorized limits of gaseous and liquid discharges are being discharged into the surrounding environment from nuclear facilities belonging to JAVYS, a.s.

The objective of the discharge limit values is to ensure that the summary discharge of radioactive substances into the surroundings from all the sources in the site under normal and specific operating conditions is such that the annual limit of exposure per capita of 12 µSv/year is not exceeded for facilities RAW PTT, A1 NPP and ISFS due to the impact of the operation of nuclear facilities, as well as 20 µSv/year for V1 NPP nuclear facility is due to the radioactive releases into the atmosphere and hydrosphere. Radioactive discharges into the atmosphere and hydrosphere are evaluated together.

The limit values of the radioactive discharges into the air are set out in the LaC for each nuclear facility (RAW PTT, A1 NPP, ISFS, V1 NPP, FP LRAW). They have been laid down in the decisions of PHA SR are approved by the Nuclear Regulatory Authority of the SR.

Gaseous discharges of radioactive aerosols (β, γ) for the year 2015

Nuclear facility	Discharge activity	Annual limit	% of the annual limit
Aerosols VS 46A (MPB)	425,001 Bq	6.58 x 10 ⁸ Bq	0.065
Aerosols VS 46B (BL and OS)	23,901 Bq	1.41 x 10 ⁸ Bq	0.017
Aerosols VS 808 (BTC and OS)	297,659 Bq	1.41 x 10 ⁸ Bq	0.211
Aerosols VS 840 (ISF)	110,276 Bq	3.00 x 10 ⁸ Bq	0.037
Aerosols NPP V1	5,580,000 Bq	8.00 x 10 ¹⁰ Bq	0.007
Aerosols from FT LRAW	11,600 Bq	8.00 x 10 ⁷ Bq	0.015

Air mass from the FP LRAW facility is discharged into the SE-EMO stack (not directly into the environment). Refiltration of air mass and subsequent discharge into the environment occurs in SE-EMO facilities, together with the air mass from SE-EMO.

No radioactive substances have been released into the atmosphere from the NRWR premises, given the nature of the repository.

In 2015, discharges from JAVYS's nuclear facilities have been **deep below the authorised limits** laid down by the PHA SR.

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WATER MANAGEMENT

In the field of water protection, JAVYS, a.s., complies with the basic law – National Council of the Slovak Republic Act No. 364/2004, the Water Act, as amended, and all on it direct and indirect successor acts and executive orders as amended by later regulations.

The values of the permitted discharged wastewater quantity, the concentration and balance limits of pollutants in wastewaters, the place and method of discharges, etc. are determined by the applicable decisions of the government and supervisory authorities in the field of water protection issued for JAVYS, a.s.

DRINKING WATER

For drinking and social purposes JAVYS, a. s. uses the drinking water distribution by Trnavská vodárenská spoločnosť in the Jaslovské Bohunice site.

The operations in the Mochovce – NRWR and FP LRAW site use water supply from SE-EMO as a source of drinking water.

Spaces of the FCCS production plant are supplied with drinking water from the public water supply by Trnavská vodárenská spoločnosť and the supply of drinking water for the administrative centre in Bratislava is ensured from the public tap of Bratislavská vodárenská spoločnosť.

The quantity of drinking water consumed in the 2012 – 2015 period

Location	Quantity of drinking water (m ³)			
	2015	2014	2013	2012
Jaslovské Bohunice	50,364	56,640	81,279	147,897
NRWR	791	902	254	266
FP LRAW	331	227	220	215
FCC production plant	997	983	995	731
Bratislava Administrative Center	1,040	947	1,016	1,237
Total	53,523	59,699	83,764	150,346

The total consumption of drinking water fell by 6,176 m³ in 2015 compared to the previous year, which represents a reduction in the consumption of 10.3%.

Analysis of drinking water samples

In JAVYS, a.s., the quality of drinking water is controlled within the meaning of SR Government Regulation No. 354/2006, as amended, laying down the requirements for water intended for human consumption and the control of the quality of water intended for human consumption. In 2015, accredited sampling and analysis of drinking water samples was carried out in the premises of the Jaslovské Bohunice and FCCP Trnava within the meaning of the applicable contract. A test report has been issued for each analysis, and in all cases, the investigated sample was in accordance with the limit values set out in the GR SR No. 354/2006 and No. 496/2010 in the evaluated sample indicators.

COOLING WATER

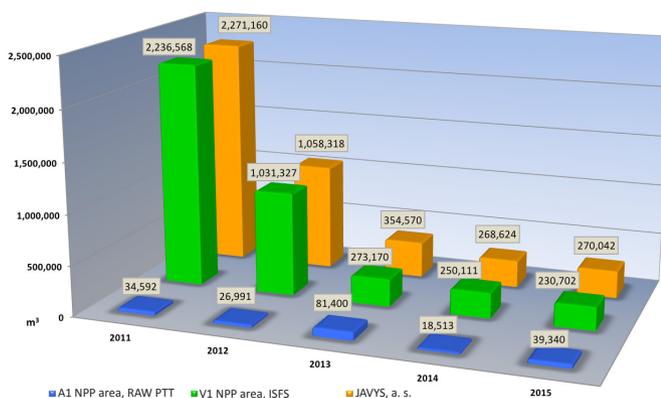
Jaslovské Bohunice Site

In the Jaslovské Bohunice site, surface water from Sĺňava reservoir is used as cooling water. Its contractor is SE-EBO.

Surface (raw) Váh water is used for cooling the security and emergency systems in V1 NPP, for the cooling of radioactive waste processing and storage facilities. From June 2012, water is filtered on sand filters in the new raw water filter station V1. Cooling water consumption has had a downward trend from 2010.

Consumption of cooling water – Váh water in the 2011 – 2015 period (m³)

Year	V1 NPP area ISFS	A1 NPP area RAW PTT	JAVYS, a. s.
2011	2,236,568	34,592	2,271,160
2012	1,031,327	26,991	1,058,318
2013	273,170	81,400	354,570
2014	250,111	18,513	268,624
2015	230,702	39,340	270,042



FP LRAW Mochovce Site

Technological facilities of FP LRAW (bitumen lines and thickening evaporator) are connected to the supply of unimportant technical water from SE-EMO distribution, i.e. to the circulation cooling water. Cooling water consumption from January to December 2015 recorded on the invoice measurements was 2,693 m³. Volumetric activity is continuously measured in the cooling water in FP LRAW; in the case of exceeding the set limit values of the activity, the technology is suspended until the identification of the source. The active cooling water is then pumped into the active wastewater. During the reporting period, there was no increased activity of the cooling water.

WASTEWATER

Jaslovské Bohunice Site

In the JAVYS, a.s. in the Jaslovské Bohunice site there are several types of sewage in the plant:

- Rain – empties into the Dudváh recipient through the open Manivier canal.
- Sewage – empties into the sewage treatment facility – BIOCLAR, and then into Váh through SOCOMAN piping collector.
- Industrial – water contaminated by petroleum substances empties into the central gravitational oil separator, after the purification the water is piped into the treatment of additional cooling water by clarification in the SE-EBO.
- Special – empties into collecting tanks of facilities for special cleaning of radioactive water for the given site, and after purification and control the wastewater is discharged in an organized manner.
- The resulting SOCOMAN drainage collector – discharges the other wastewater from technological facilities for processing and treatment of RAW including the low-active water into the Váh recipient.

The balance of the discharged wastewater

Wastewater from the Jaslovské Bohunice site is discharged through the SOCOMAN pipe collector and open Manivier canal within the meaning of the applicable decision no. OSŽP2-2013/00026/GI, issued by the DO in Trnava on 24 October 2013. This authorization is valid until 31 October 2023.

JAVYS, a.s. does not have the obligation to measure the quantity and quality of discharged water from rainfall from JAVYS a. s. into Dudváh recipient through open Manivier channel.

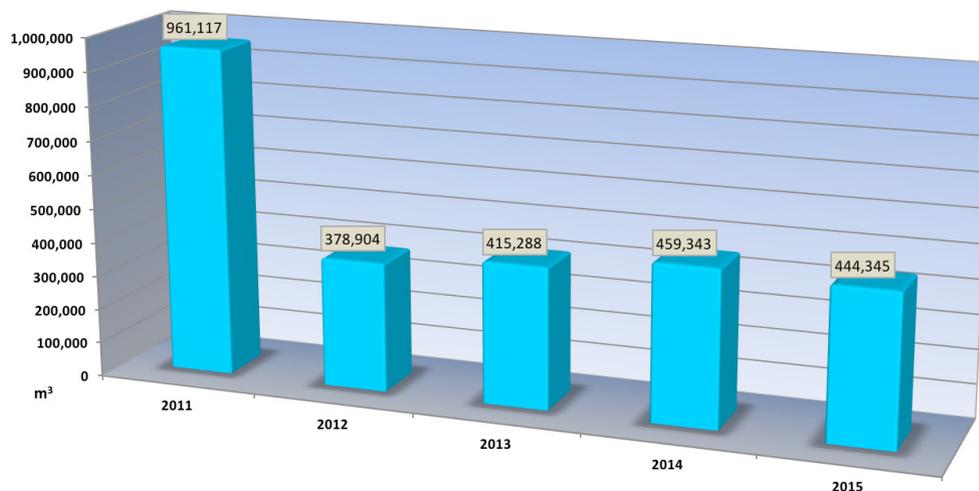
For discharges of wastewater from the Jaslovské Bohunice site into the SOCOMAN piping channel or through the open Manivier channel (only under a special program), it is necessary to monitor the quantity and quality of discharged wastewater in order not to exceed the emission limit values set out in the applicable decision on discharge of sewage water no. OOU-TT-OSŽP2-2013/00026/GI.

During the reporting period, there was no exceeding of the limit values of pollutant indicators in wastewater.

The quantity of wastewater discharged into Váh recipient in the 2011 – 2015 period (m³)

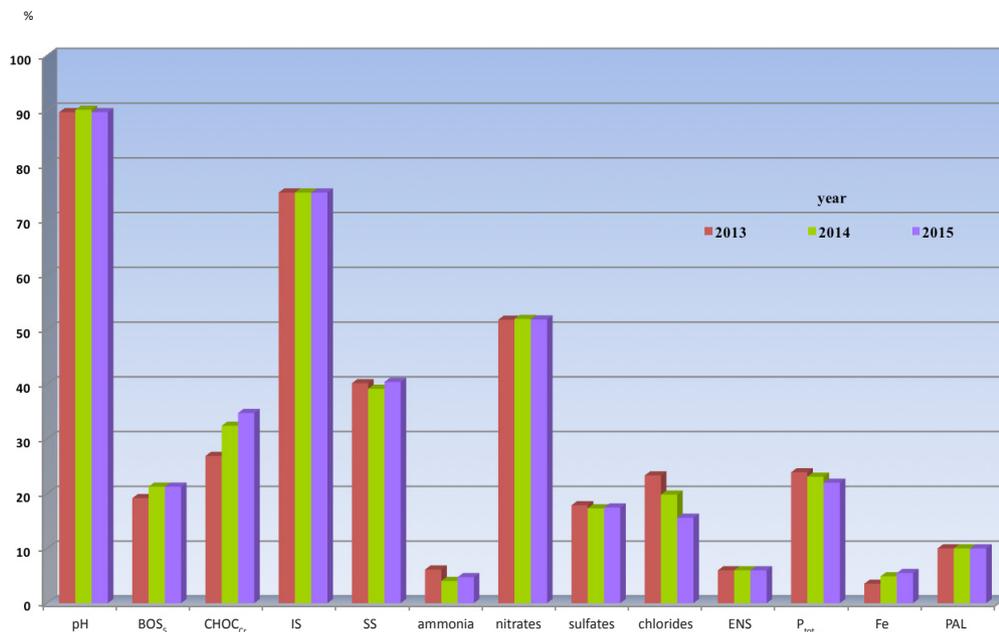
Recipient	2011	2012	2013	2014	2015
Váh	961,117	378,904	415,288	459,343	444,345

The quantity of wastewater discharged into Váh recipient in the 2011 - 2015 period



The average concentration of chemical pollution discharged into the Váh recipient

Chemical indicators of pollution	The average concentration of the discharged pollution (for the year 2015)	The maximum allowed concentration (decision OU-TT-OSZP2-2013/00036/GI)
	mg/l	mg/l
Acidity, alkalinity - pH	8.070	9.00
Biochem. oxygen consumption - BOS ₅	1.700	8.00
Chem. oxygen consumption - CHOC _{Cr}	10.417	30.00
Insoluble substances - IS	15.000	20.00
Soluble substances - SS	404.056	1,000.00
Ammonia - N-NH ₄ ⁺	0.187	4.00
Nitrates - NO ₃ ⁻	25.910	50.00
Sulphates - SO ₄ ²⁻	26.204	150.00
Chlorides - Cl ⁻	15.603	100.00
Extracted non-polar substances - ENS	0.021	0.35
Total phosphates - P _{total}	0.438	2.00
Iron - Fe	0.113	2.00
Detergents - PAL	0.052	0.50



Compliance with concentration values of wastewater discharged into Váh recipient in %

NRWR Mochovce Site

In the NRWR site, there is a rain sewer which empties into Telinský stream through the rain tanks.

The Chief Public Health Officer of the SR issued permission for the implementation of activities leading to exposure for JAVYS, a. s. through Decision No. OOPŽ/6573/2011, including limits on the activities of radionuclides, discharged in the water from surface runoff from the Mochovce NRWR. The decision on the discharge of water from surface runoff issued by the regional office in Nitra, Environmental Department. In 2015, JAVYS, a.s. applied for renewal of the original authorization for the discharge of water from surface runoff. DO Nitra, Department of Environmental Care, extended the validity of the permit until 31 December 2020 through decision No. 2015/040759 dated 8 December 2015. 2,450 m³ of water were discharged from NRWR in 2015 from the surface runoff into the Telinský stream. Sewage water in the volume of 174 m³ accumulated in a waterproof cesspool at NRWR was removed to the wastewater treatment plant for the purpose of cleaning.

FP LRAW Mochovce Site

Sewage water from the FP LRAW is drained into the SE-EMO sewage network, from there to wastewater treatment plant and after purification it is discharged into the environment together with the waters from SE-EMO.

The quantity of rainwater is calculated from the total area of the FP LRAW roofs and average annual rainfall (1.7 mm/day). Rainwater is also drained into the SE-EMO rainwater drainage, together with rainfall waters from other SE-EMO structures. Rainwater is collected in the retention tanks and emitted into the environment after measurement.

The discharge of sewage and rainwater is ensured by Slovenské elektrárne, a. s.

DISCHARGES OF RADIOACTIVE SUBSTANCES INTO THE HYDROSPHERE

Only a small percent of the permitted limits of liquid discharge are discharged from the nuclear facilities of JAVYS, a.s. into the surrounding environment after multiple control measurements.

The objective of the discharge limit values is to ensure that the summary discharge of radioactive substances into the surroundings from all the sources in the site under normal and specific operating conditions is such that the annual limit of exposure per capita of 12 µSv/year is not exceeded for nuclear facilities RAW PTT, A1 NPP and ISFS due to the impact of the operation of nuclear facilities, as well as 20 µSv/year for the V1 NPP nuclear facility is due to the radioactive releases into the atmosphere and hydrosphere. Radioactive discharges into the atmosphere and hydrosphere are evaluated together.

The limit values of the radioactive releases into surface waters are laid down in the LaC of JAVYS, a.s. nuclear facilities (RAW PTT, A1 NPP, ISFS, V1 NPP, NRWR and FP LRAW). They have been laid down in the decisions of PHA SR and approved by the Nuclear Regulatory Authority of the SR.

Regulation of the discharged activities in wastewater is carried out by measuring the volume of activity of tritium, corrosive and fission products, and the quantity of water in the collection tanks for RAW PTT, A1 NPP, ISFS and V1 NPP while water discharge is also checked by continuous monitoring in measurement structures. The low-activity water also includes water discharged from the implementation of the standard operation of groundwater rescue pumping from well N-3 (SO 106), for which a permit was granted by DO Trnava in accordance with Act No. 364/2004 on waters.

The discharge of low-activity water from the Jaslovské Bohunice site (including remediation pumping water from the RAW PTT and A1 NPP) into the Váh recipient

The activity of radionuclides in the wastewaters of Váh recipient								
2015	The V1 NPP area, ISFS				The A1 NPP area, RAW PTT			
	CFP (MBq)	tritium (GBq)	% CFP drawing limit*	% ³ H drawing limit*	CFP (MBq)	tritium (GBq)	% CFP drawing limit**	% ³ H drawing limit**
Total	28.204	3.961	0.217	0.198	11.731	177.288	0.098	1.773

* the CFP limit is 13,000 MBq; the tritium limit is 2,000 GBq (from 20 July 2011)

** the CFP limit is 12,000 MBq; the tritium limit is 10,000 GBq

Dudváh recipient – low-activity water discharges

No low-activity water was discharged in 2015 into the Dudváh recipient.

Active discharges into the hydrosphere from the NRWR and FP LRAW

Only water from surface runoff is discharged into the NRWR, and the limits of the discharged water indicators were not exceeded during the reporting period. The measured values (^3H , ^{60}Co , ^{137}Cs , ^{90}Sr , $^{239+240}\text{Pu}$) were at the level of the detection limits.

Water in a volume of $2,450 \text{ m}^3$ with a total activity of $6.898 \times 10^6 \text{ Bq}$ was released into the hydrosphere, i.e. the Telinský stream.

The above chart shows the percentage evaluation of the overall activity of the various radionuclides in $2,450 \text{ m}^3$ of the discharged volume of surface runoff to LaC. The volume activity limits of radionuclides in discharged waters, laid down in the decision of the chief hygienist, were not exceeded in any of the indicators in the reporting period.

Data on the quality of discharges wastewater from rainfall from NRWR

Radionuclide	Discharge activity (Bq)	Annual limit (Bq)	% of the annual limit
^3H	6.13×10^6	1.88×10^{10}	0.033
^{137}Cs	6.40×10^3	2.28×10^7	0.281
^{60}Co	5.70×10^3	2.24×10^7	0.254
^{90}Sr	5.97×10^5	2.44×10^8	0.245
^{239}Pu	2.40×10^4	5.56×10^5	4.286

Two kinds of secondary active liquid waste are produced in FP LRAW. These active media (wastewater, bride condensate) are not discharged into the environment (active discharges), but they are pumped into the SE-EMO system for further processing.

Data on the quality of discharged active secondary wastewater from FP LRAW into SE-EMO

Radionuclide	Wastewater $V = 113.12 \text{ m}^3$	Bride condensate $V = 0 \text{ m}^3$	The sum of activity	Annual Bq limit	% of the limit
Tritium (Bq)	3.232×10^9	0	3.232×10^9	3.0×10^{11}	1.08
Corrosion and fission products (Bq)	2.736×10^8	0	2.736×10^8	3.9×10^9	70.15

Note: Wastewater and bride condensate are purified in SE-EMO, i.e. contributions in the discharges into the environment are even lower.

In 2015, JAVYS, a.s. did not exceed the limit for tritium activity in the discharged waters and discharges of corrosive and fission products in the wastewaters were under the authorised limits.

GROUNDWATER MONITORING AND PROTECTION

Jaslovské Bohunice Site

The monitoring and protection of groundwater and soil water in the Jaslovské Bohunice site and its surroundings has been carried out since 1997 in accordance with the approved monitoring program. The long and regularly monitored radiation situation in the groundwater of the RAW PTT and A1 NPP site is currently stabilized. The system of continuous salvage pumping has been in operation on the site since 2000.

Activities are implemented in the framework of the A1 NPP decommissioning project, which gradually removed the primary source of contamination of the soil and, consequently, the groundwater.

An independent study under the name Need for Salvage Pumping in the A1 NPP Site was prepared to assess the effectiveness and suitability of the implemented groundwater salvage pumping (well N-3), which recommends keeping the continuous groundwater rescue pumping without changes in the salvage procedure.

Evaluation of standard groundwater remediation pumping operation from the N-3 well

Remediation pumping 2015	Exhausted CFP activity (MBq)	CFP limit drawing* (%)	Depleted tritium activity (GBq)	³ H limit drawing* (%)	Pumped water volume (m ³)
Total	2.86	0.024	60.98	0.610	185,844.7

* the „pumping limit“ values are determined by the decision, the CFP limit = 1.2×10^4 MBq, the ³H limit = 1.0×10^4 GBq

Monitoring of the surroundings is carried out in addition to monitoring inside the company premises. On the basis of the groundwater monitoring results in the vicinity of the Jaslovské Bohunice site, it is possible to observe significant improvement of the radiation situation (reduction in the level of the volume activities of tritium to an insignificant level reaching the level of natural background) in and around the villages of Malženice and Žilkovce.

NRWR Mochovce Site

There are 52 monitoring wells in the NRWR site and in its vicinity (underground water), from which samples were taken according to the current schedule for 2015, and then chemical and radiochemical analyses were carried out of them.

Drainage water is also monitored at the NRWR in addition to groundwater, in which the volume activity of individual radionuclides in 2015 was below the limit set by the Chief Health Officer of the SR in Decision No. OOZPŽ/6573/2011.

Drainage water is discharged through rain tanks, their quantity and analyses are included in discharged waters.

The results of chemical and radiochemical water analyses

Measured quantity	The value of the activity (Bq/l)
^3H	< 5
total beta activity	< 1
^{137}Cs	< 0.75
^{60}Co	< 0.82
^{90}Sr	< 0.10
^{239}Pu	< 0.05

Radiochemical measurement results are at the level of the background and during operation there are no negative effects on the environment in the NRWR site and in its surroundings.



WASTE MANAGEMENT INACTIVE WASTE

JAVYS, a.s., complied with the basic regulation in 2015 in the field of waste management (inactive waste) – the National Council of the Slovak Republic Act No. 223/2001 on waste, as amended by later regulations, and all subsequent laws and executive orders, as amended.

Jaslovské Bohunice Site

Waste management is ensured through the collection, sorting and storing in the secured premises reserved for these purposes – Waste Collection Yard. Wastes in the hazardous category are temporarily stored, prior to their final disposal, in the appropriate technologically secured premises so as to avoid their negative impact or threat to the life and health of people, property and the environment.

The composition of waste produced directly or indirectly derives from activities related to the business of JAVYS, a. s.

Wastes in other categories (O) and hazardous (H) were produced in JAVYS, a.s. in 2015 according to the catalogue of waste (ME SR Decree No. 284/2001), municipal and biodegradable waste.

The quantities and types of other waste produced in 2015

Catalogue number	Type of waste	The name of the waste	Quantity (kg)	Recovery (kg)	Destroyed (kg)
080318	O	Waste toner cartridge into the printer other than 080317	1,120	✓	
150101	O	Paper and paperboard	870	✓	
150102	O	Plastic packaging - PET	780	✓	
150203	O	Absorbents, filter materials, wiping cloths.....	26,980		✓
160214	O	Discarded equipment other than those mentioned in 160209-13	2,370	✓	
170101	O	Concrete	16,240	✓	
170201	O	Wood	29,410	✓	
170302	O	Bituminous mixtures other than 170301	1,840		✓
170604	O	Insulation materials other than in 170601 to 03	47,520		✓
170904	O	Mixed waste, construction and demolition waste	206,630		✓
Total quantity (kg)			333,760	50,790	282,970
Total quantity (%)			100%	15.22%	84.78%

The quantities and types of hazardous waste produced in 2015

Catalogue number	Type of waste	The name of the waste	Quantity (kg)	Recovery (kg)	Destroyed (kg)
070103	H	Organic halogen solvents, washing liquids and lye	1,100		✓
080111	H	Waste paints and varnish contain. organic solvents and DS	1,310		✓
080409	H	Waste adhesives and sealants containing DS	1,040		✓
090104	H	Fixer solutions	910		✓
130310	H	Other insulating and heat transmission oils	2,020	✓	
130507	H	Water contain. oil from oil/water separators	960		✓
150110	H	Packaging containing DS, cont. DS	800	✓	
160213	H	Discarded equipment contain. NL	1,270	✓	
160506	H	Laboratory chemicals consisting of DS, contain. DS	140		✓
160507	H	Discarded inorganic chemicals contain. DS, consisting of DS	0,020		✓
160601	H	Lead-acid batteries	4,850	✓	
191206	H	Wood containing DS	5,600		✓
Total quantity (kg)			20,020	8,940	11,080
Total quantity (%)			100%	44.66%	55.34%

The quantity of other and hazardous waste produced in the 2011 - 2015 period



The quantity of municipal waste and biodegradable waste produced in 2015

Catalogue number	Type of waste	The name of the waste	Quantity (kg)	Recovery (kg)	Destroyed (kg)
200301	○	Mixed municipal waste	34,810		✓
200201	○	Biodegradable waste	29,940	✓	
Total quantity (kg)			64,750	29,940	34,810
Total quantity (%)			100%	46.24%	53.76%

Waste disposal and recovery are provided by companies that have the appropriate permits and authorization for the handling of various types of waste. Disposal of municipal waste is carried out by municipalities in appropriate locations (Bratislava, Trnava, Jaslovské Bohunice) in accordance with the generally binding regulations of local authorities.

Mochovce Site

Unsorted municipal waste in the quantity of 1.729 t was produced in the Mochovce site at the NRWR and FP LRAW.

Export and disposal of waste from the site in Mochovce is done through a service provider, which is SE-EMO.



SERIOUS INDUSTRIAL ACCIDENTS

In the field of the prevention of serious industrial accidents, JAVYS, a.s. complies with the basic law – the National Council of the Slovak Republic Act No. 128/2015 on the prevention of major industrial accidents and on amendments to certain laws, as well as all subsequent laws and executive orders, as amended.

THE CATEGORISATION OF JAVYS, A.S. IN VIEW OF THE EXISTING LEGISLATION IN THE FIELD OF SIA

Within the meaning of Act No 128/2015, Jadrová a vyradovacia spoločnosť, a. s. is not included in categories as “A” or “B” based on the quantity and characteristics of dangerous substances present in the Jaslovské Bohunice site.

Nevertheless, the company is obliged to continue to regularly monitor the quantity, characteristics and nature of the DS present in the enterprise and in the case of detection of changes to the inclusion, send a new notification to the DO in the headquarters of the region.

“Management of chemical substances” (MCS) application is used to monitor the handling of dangerous chemicals. The application contains a classifier of all chemical substances and mixtures purchased and used in the company and also brought into the JAVYS, a. s. premises by contractors and tenants. All chemical substances and mixtures are categorized according to the chemical act, act on waters and act on the prevention of major industrial accidents.



ENVIRONMENTAL IMPACT ASSESSMENT ACCORDING TO ACT NO. 24/2006

In the field of environmental impact assessment, JAVYS, a.s. complies with the basic regulation – National Council of the Slovak Republic Act No. 24/2006 on environmental impact assessment and on amendments to certain laws, as amended. There is ongoing process on the environment impact assessment of the new proposed activities categorized according to Appendix 8 of the act in the light of the requirements of this Act, along with the assessment of changes to existing activities based on the Notification of change of the proposed activity.

ENVIRONMENT IMPACT ASSESSMENT PROCESSES

Jaslovské Bohunice site

Environment impact assessment processes continued at the Jaslovské Bohunice site in 2015 for the existing activities, or their changes:

- The completion of the storage capacity for the Interim Spent Fuel Storage in the Jaslovské Bohunice site (presentation of expert opinion and the draft of the final opinion at the ME SR dated 10 December 2015).
- The decommissioning of the A1 Nuclear Power Plant, Stages III and IV (issue of the final opinion of the ME SR No. 2292/2015-3.4/hp dated 27 November 2015).

The process ongoing from 2014 regarding the project entitled Facility for Re-melting of Metal Radioactive Waste in the Jaslovské Bohunice Site was terminated upon the release of the final opinion of the ME SR no. 1775/2015-3.4/hp dated 26 January 2015.

Mochovce Site

On the basis of the completed EIA process, investment projects were carried out during 2015 in the NRWR site:

- Facility for the management of IRAW and CRAM.
- The completion of a repository for very low-activity RAW.

More detailed information about the processes for environmental impact assessment is published at a website of JAVYS, a.s. and in the EIA/SEA information system.



ENVIRONMENTAL MANAGEMENT SYSTEM

By maintaining a certified environmental management system according to ISO 14001:2004 „Environmental management systems“ JAVYS, a.s. carried out all activities with regard to the protection of the environment in 2015.

In the context of the procedural approach, environmental protection is regularly checked and verified by internal ISM audits, during which the environmental management system is also examined. Two ISM audits were carried out in 2015, also aimed at checking the environmental protection requirements. In April, an audit was carried out in the operation of the V1 mechanical-biological cleaning sewage station, in the V1 wastewater disposal plant, in the V1 pumping station of raw, fire and cooling water, and in the V1 chemical water treatment plant. An audit in the BRWTC operation was carried out in June.

There were no discrepancies in the performance of audits.

ABBREVIATIONS

AC	Administrative center
As	Arsenic
BL	Bitumen line
Bq	Becquerel
BRWTC	Bohunice Radioactive Waste Treatment Centre
C _{org}	Organic carbon
Cd	Cadmium
CFP	Corrosion and fission products
CO ₂	Carbon monoxide
Co	Cobalt
Cr	Chrome
Cs	Caesium
Cu	Copper
DG	Diesel generator
DO	District Office
DS	Dangerous substance
E	Environment
EU	European Union
FCCP	Fibre concrete container production
FP LRAW	Final Processing of Liquid Radioactive Waste
GBq	Gigabecquerel
³ H	Tritium
HCl	Hydrogen chloride
HF	Hydrogen fluoride
Hg	Mercury
IMS	Integrated management system
ISFS	Interim Spent Fuel Storage
JAVYS, a. s.	Jadrová a vyraďovacia spoločnosť, a. s.
JESS	Jadrová energetická spoločnosť Slovenska, a. s.
LaC	Limits and conditions



↓

MBq	Megabecquerel
ME SR	Ministry of Environment of the Slovak Republic
Mn	Manganese
MPB	Main production block
Ni	Nickel
NO_x	Oxides of nitrogen
NRA SR	Nuclear Regulatory Authority of the Slovak Republic
NRWR	National Radioactive Waste Repository
NPP	Nuclear power plant
OS	Outdoor structures
Pb	Lead
PHA SR	Public Health Authority of the Slovak Republic
PM	Particulate matter
P_{total}	Total phosphorus
Pu	Plutonium
RAW	Radioactive waste
RAW PTT	Radioactive Waste Processing and Treatment Technologies
REO	Regional Environmental Office
SAP	Source of air pollution
SE-EBO	Slovenské elektrárne, a. s., Bohunice Nuclear Power Plant
SE-EMO	Slovenské elektrárne, a. s., Mochovce Nuclear Power Plant
SF₆	Sulphur hexafluoride
SIA	Serious industrial accidents
SO₂	Sulphur dioxide
Sr	Strontium
SuRBR	Start-up and reserve boiler room
Tl	Tellurium
VS	Ventilation chimney



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