



REPORT ON THE IMPACT
OF JAVYS' OPERATION
ON THE ENVIRONMENT
IN 2014





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1.

INTRODUCTION

The Environmental Report for 2014 provides comprehensive information on the protection of air, water and waste management, the prevention of industrial accidents, the handling of chemicals, the environmental impact assessment (EIA) processes and activities for environmental protection in JAVYS.

The purpose and mission to carry out all activities with a view to protecting the environment are demonstrated by maintaining JAVYS' certified environmental management system according to standard ISO 14001: 2004 on Environmental Management Systems.

In the performance of all activities, emphasis is placed on compliance with legal requirements identified by the laws of the SR and the EU in individual fields of environmental protection, as well as the obligation to comply with the limits and conditions of decisions of government and supervisory bodies regarding the protection of the individual environmental components.

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

2.

A I R P R O T E C T I O N

In the field of air protection, JAVYS follows the basic legal regulation, which is the National Council of Slovak Republic Act No. 137/2010 Coll. on Air, as amended, and all of the associated laws, implementing decrees and Slovak Government regulations.

The method of operating air pollution sources from the source permission, the determining of the emissions monitoring system, to determining the limits of pollutants emitted into the air, are governed by the valid decisions of the government and regulatory authorities in the field of air protection issued for JAVYS.

SOURCES OF AIR POLLUTION

JAVYS is the operator of air pollution sources in the categories – large, medium, small sources.

Start-up and reserve boiler room (SuRBR)	large source
LOOS boiler in the SuRBR	medium source
Gas heaters in the FCC Trnava factory	medium source
Diesel generator at the V1 service station	medium source
Diesel generator in the FCC Trnava factory	small source
Diesel generator at ISFS	small source
Gas appliances (boilers) in the FCC Trnava factory	small source
Manufacture of fiber reinforced concrete mixture in the FCC Trnava factory	small source

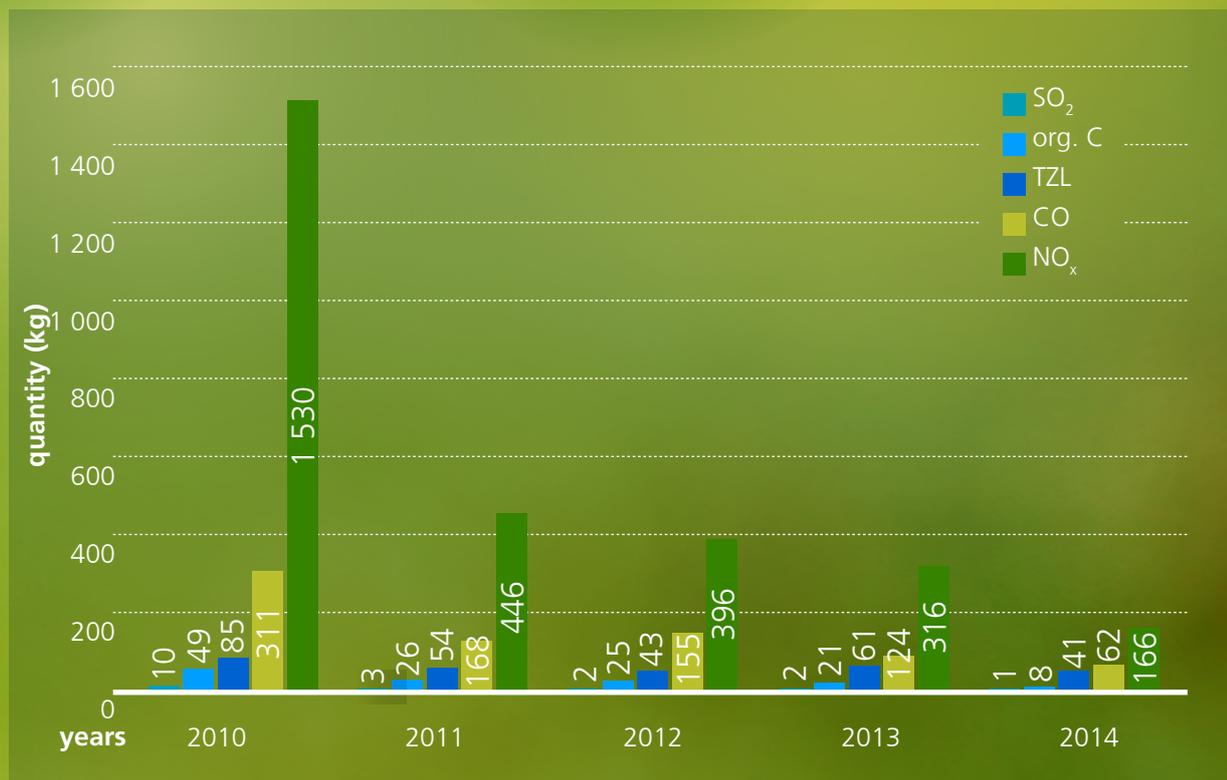
The quantity of emissions discharged from individual sources in 2014

Source	Fuel	Pollutant (kg)				
	natural gas (m ³)	PM	SO ₂	NO _x	CO	C _{org}
SuRBR	17,386	1.321	0.159	29.069	9.746	1.239
LOOS boiler	263	0.020	0.002	0.390	0.157	0.026
gas heaters	75,065	5.705	0.685	111.248	44.927	5.241
gas appliances	9,965	0.757	0.091	14.768	5.964	0.994
diesel (t)						
portable V1 diesel generator station	0.693	0.984	0.014	3.465	0.554	0.079
ISFS diesel generator	1.264	1.789	0.025	6.300	1.008	0.144
diesel generator in the FCC factory	0.084	0.119	0.002	0.420	0.067	0.010

Diesel generators at ISFS and in the manufacture of fiber-concrete containers are not permanently in operation, serving as an emergency power source.

The license to operate the manufacture of a fiber reinforced mixture was issued by the Municipal Office in Trnava on 10 March 2010. 350 fiber-concrete containers were produced in 2014, i.e. 1,505 t of fiber concrete mixture, representing air pollution through particulate matter in the amount of 0.0301 t.

Trends of pollutants discharged in the air from JAVYS' air pollution sources in 2010 – 2014



Quantities of emissions released from the 740-IX.1 gas boiler for the year 2014

Fuel	Pollutant (kg)					
	PM	SO ₂	NO _x	CO	C _{org}	
natural gas (m ³)	29,094	2.211	2.65	43.117	17.413	2.902

The owner and operator of the 740-IX.1 gas boiler is JESS. It falls under the medium sources of air pollution.

Quantities of emissions released from the BTC RAW incinerator in 2010 – 2014

Pollutant (kg)	2014	2013	2012	2011	2010
HCl	9.520	0.550	23.840	0.540	1.050
HF	1.510	0.570	0.820	0.113	8.960
Hg+Tl+Cd	0.128	0.069	0.054	0.034	0.035
As+Ni+Cr+Co	0.616	0.372	0.290	0.330	0.430
Pb+Cu+Mn	0.523	0.307	0.240	0.205	0.157
SO ₂	150.320	29.360	107.000	4.050	6.110
NO _x	362.370	247.500	62.930	676.660	852.750
CO	64.930	35.730	17.170	57.930	78.380
PM	3.320	4.890	3.550	5.610	5.230
C _{org}	6.760	6.890	11.000	12.470	14.460
Operating hours	3,796	3,251	2,671	4,851	5,342

The BTC RAW incinerator is not considered a source of air pollution, and therefore it does not fall under the Act. The incinerator is classified as a nuclear facility and state supervision is carried out by the NRA SR.

DEVICES CONTAINING FLUORINATED GREENHOUSE GASES

Data on facilities containing fluorinated greenhouse gases listed in the table have been notified for DO Trnava and DO Bratislava. They are subject to the operational conditions under Act No. 286/2009 Coll. on fluorinated greenhouse gases and European Parliament and Council Regulation (EC) No. 842/2006 on certain fluorinated greenhouse gases.

Devices containing fluorinated greenhouse gases above 3 kg in Jaslovské Bohunice

Structure	Device	Filling	Total volume (kg)	Quantity	Owner
External switchgears A1	compact switchgear 110 kV	SF ₆	186	2	JAVYS
External switchgears A1	measuring current transformer	SF ₆	24	6	JAVYS
External switchgears A1	measuring voltage transformer	SF ₆	26.4	6	JAVYS
Administrative building A1	air conditioning unit MITSUBISHI	R 410A	23	1	JAVYS
Administrative building A1	air conditioning unit MITSUBISHI	R 410A	23	1	JAVYS
Administrative building A1	air conditioning unit MITSUBISHI	R 410A	26	1	JAVYS
Administrative building A1	air conditioning unit MITSUBISHI	R 410A	22	1	JAVYS
Administrative building A1	air conditioning unit MITSUBISHI	R 410A	23	1	JAVYS
Administrative building A1	air conditioning unit PANASONIC	R 410A	3.4	1	JAVYS
Administrative building A1	air conditioning unit PANASONIC	R 410A	3.4	1	JAVYS
Medical center	air conditioning unit MITSUBISHI	R 410A	8.5	1	JESS
Special laundry room	air conditioning unit TOSHIBA	R 410A	18	1	JAVYS
Administrative building V1	split unit LG	R 410A	7.55	1	JAVYS
Administrative building V1	split unit LG	R 410A	7.55	1	JAVYS
Administrative building V1	split unit LG	R 410A	7.55	1	JAVYS
Administrative building V1	split unit LG	R 410A	7.55	1	JAVYS
Administrative building V1	split unit UNIFLAIR	R 407C	3.2	1	JAVYS
Administrative building V1	split unit UNIFLAIR	R 407C	3.2	1	JAVYS
Administrative building V1	split unit UNIFLAIR	R 407C	3.2	1	JAVYS
Administrative building V1	split unit UNIFLAIR	R 407C	4.5	1	JAVYS
Administrative building V1	split unit UNIFLAIR	R 407C	3.1	1	JAVYS
Administrative building V1	split unit UNIFLAIR	R 407C	3.2	1	JAVYS
Administrative building	cooling unit YORK	R 410A	2 x 23	2 cooling circuits	JESS
Administrative building	cooling unit YORK	R 410A	2 x 23	2 cooling circuits	JESS
Administrative building	cooling unit YORK	R 407C	15	1	JESS
BTC RAW	air conditioning unit CARRIER	R 407C	2 x 29	2	JAVYS

Note: UNIFLAIR devices in the V1 administrative building have not been used since 2013. The last inspection of the devices was carried out by an expert on 5 November 2013, and no leak was detected during the inspection. The devices were destroyed on 20 November 2014 by the authorized company KLIMATREND Nitra.

Facilities containing fluorinated greenhouse gases with content above 3 kg in Bratislava, Tomášikova 22

Structure	Device	Filling	Total volume (kg)	Quantity	Owner
AC Bratislava	air conditioning unit TOSHIBA	R 410A	11	1	JAVYS
AC Bratislava	cooling unit YORK	R 407C	22	1	JAVYS
AC Bratislava	VRV system DAIKIN	R 407C	11.2	1	JAVYS
AC Bratislava	VRV system DAIKIN	R 407C	11.2	1	JAVYS
AC Bratislava	VRV system DAIKIN	R 407C	11.8	1	JAVYS
AC Bratislava	VRV system DAIKIN	R 407C	6.3	1	JAVYS
AC Bratislava	VRV system DAIKIN	R 407C	6.4	1	JAVYS

GREENHOUSE GAS EMISSIONS

Under Act No. 414/2012 Coll. on Emissions Trading, JAVYS is a mandatory participant in the trading scheme. In 2014, **34.3 tons of greenhouse gases (CO₂)** were discharged into the atmosphere from the operation.

The 2014 report on greenhouse gas emissions from the operation was prepared and certified by an accredited verifier (ENVI PROTECTION, s.r.o.) in accordance with the law based on a valid order. The Emission report was sent to DO Trnava and the ME SR along with the validation report.

DISCHARGES OF RADIOACTIVE SUBSTANCES INTO THE ATMOSPHERE

After repeated control measurements, JAVYS' nuclear facilities discharge only a small percentage of the allowable limits of gaseous air pollutants and liquid discharges into the surrounding environment.

The aim of the limit values for discharges is to ensure that under normal and specific operating conditions, the summary discharges of radioactive substances into the environment from all sources in the area are such that the annual limit of radiation does not exceed 12 µSv/year per capita due to the operation of the nuclear facilities in the case of the TPT RAW, A1 NPP and ISFS nuclear facilities, and 20 µSv/year for the V1 NPP nuclear facility due to radioactive releases into the atmosphere and hydrosphere. The radioactive discharges into the atmosphere and hydrosphere are evaluated together.

Limit values for radioactive discharges into the air are listed in LaC for each nuclear facility (TPT RAW, A1 NPP, ISFS, V1 NPP, FT LRAW). They were established by the decisions of PHA SR and approved by the Nuclear Regulatory Authority of the SR.

Gaseous discharges of radioactive aerosols (β , γ) for 2014

Nuclear facility	Discharge activity	Annual limit	% of the annual limit
Aerosols VS 46A (MPB)	565,089 Bq	6.58×10^8 Bq	0.086
Aerosols VS 46B (BL and ES)	32,064 Bq	1.41×10^8 Bq	0.023
Aerosols VS 808 (BTC and ES)	120,806 Bq	1.41×10^8 Bq	0.086
Aerosols VS 840 (ISFS)	111,087 Bq	3.00×10^8 Bq	0.037
Aerosols V1 NPP	5,897,000 Bq	8.00×10^{10} Bq	0.007
Aerosols from FT LRAW	6,900 Bq	8.00×10^7 Bq	0.009

Air mass from the FT LRAW facility is discharged into the SE-EMO stack (not directly into the environment). Repeated filtration of the air mass and subsequent release into the environment along with the air mass from the SE-EMO occurs in the SE-EMO facilities.

No radioactive substances were released into the atmosphere from the NRAWR premises given the nature of the repository.

In 2014 the discharges from JAVYS' nuclear installations into the atmosphere were well below the authorized limits set by PHA SR.



3.

WATER MANAGEMENT

In the field of water protection, JAVYS respects the fundamental regulation – National Council of the Slovak Republic Act No. 364/2004 Coll. on Water, as amended, and all to the directly and indirectly associated laws and executive regulations, as amended.

The values of permitted discharged wastewater volumes, concentration and balance limits of pollutants in wastewater, place and manner of wastewater discharge, the amount of collected surface water, etc. are determined by the applicable decisions of the state and supervisory bodies for water protection issued for JAVYS.

DRINKING WATER

For drinking and social purposes at the Bohunice site, JAVYS uses the drinking water distribution facility from Trnavská vodárenská spoločnosť, a.s.

Operations in Mochovce – NRAWR and FT LRAW use the supply from SE-EMO as the source of drinking water.

The premises of the FCC manufacture in Trnava are supplied with drinking water from the public water mains of Trnavská vodárenská spoločnosť, a.s., and drinking water for the administrative center in Bratislava is secured from the public mains of Bratislavská vodárenská spoločnosť, a.s.

The amount of drinking water consumed in 2011 – 2014

Location	The amount of drinking water (m ³)			
	2014	2013	2012	2011
Jaslovské Bohunice	56,640	81,279	147,897	176,550
NRAWR	902	254	266	194
FT LRAW	227	220	215	250
FCC manufacture	983	995	731	1,011
Administrative center Bratislava	947	1,016	1,237	1,792
Total	59,699	83,764	150,346	179,797

Total water consumption in 2014 decreased by 24,065 m³ compared to last year, representing a reduction in consumption by 28.7 %.

Analyses of drinking water samples

The quality of drinking water is inspected in JAVYS under Government Regulation No. 354/2006 Coll. as amended, laying down requirements for water intended for human consumption and the quality control of water intended for human consumption. In 2014,

accredited sampling and drinking water analyses were carried out under the existing contract on the premises of Jaslovské Bohunice and PFCC Trnava. A test report was issued for each analysis, and in all cases the sample was examined in terms of the evaluated indicators in accordance with the limits set out by GR No. 354/2006.

COOLING WATER

The Jaslovské Bohunice site

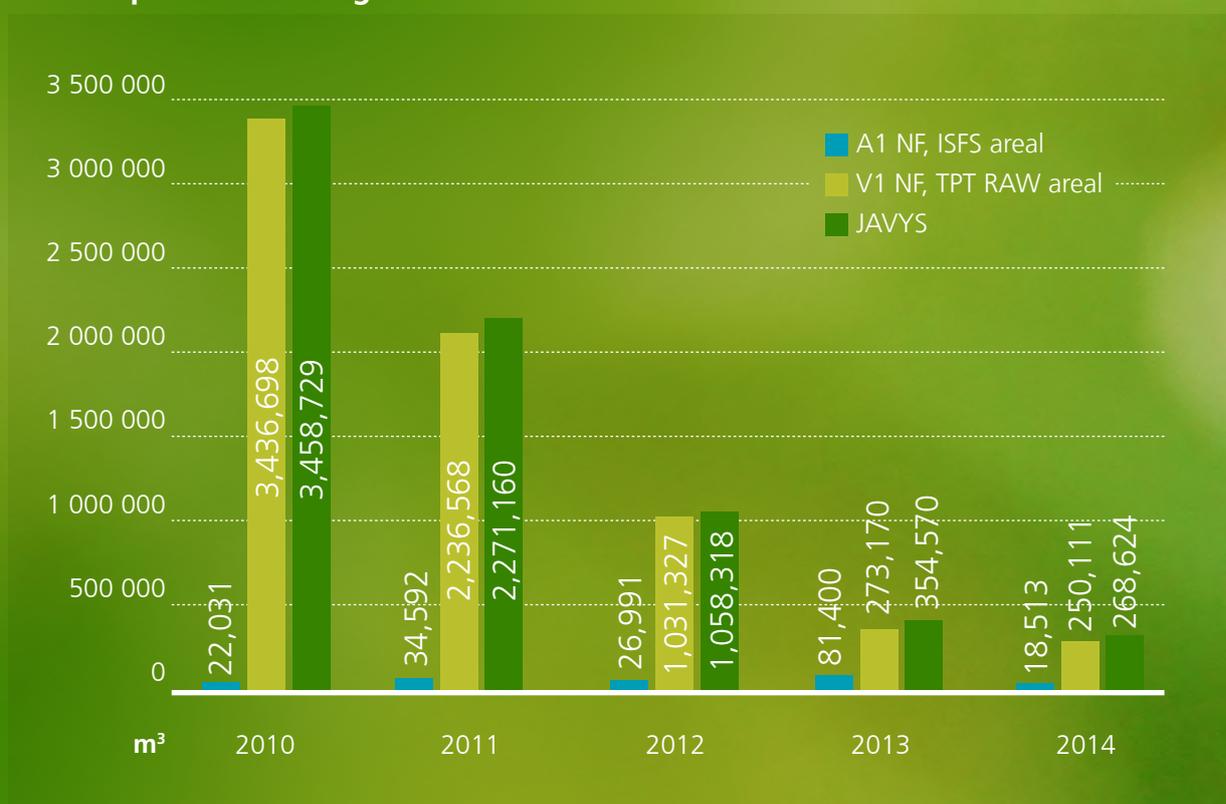
In the Jaslovské Bohunice site, surface water from the Sĺňava reservoir is used as cooling water. The supplier is SE-EBO.

Surface (raw) "Váh" water is used for the cooling of the V1 NPP safety and emergency systems and for the cooling of the radioactive waste processing and storage facilities. Since June 2012, the water has been filtered through sand filters at the new V1 raw water filtration station. Cooling water consumption has had a downward trend since 2010.

Consumption of cooling – Váh water in 2010 – 2014 (m³)

Year	V1 NPP, ISFS premises	A1 NPP, TPT RAW premises	JAVYS
2010	3,436,698	22,031	3,458,729
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

Consumption of cooling – Váh water in m³



Cooling water consumption in 2014 decreased by 85,946 m³ compared to 2013, which represents a decrease of 24.2%.

FT LRAW Mochovce premises

The technological facilities of FT LRAW (bituminisation lines and thickening evaporator) are connected to the unimportant service water supply from the SE-EMO distribution facilities, i.e. the circulating cooling water. Cooling water consumption recorded on the invoice measurements from January to December 2014 was 2,923 m³. The volume activity in the cooling water for FT LRAW is continuously measured, and the technology is shut down in case of exceeding the set activity limit values until the source of activity is discovered. Active cooling water is then pumped into active wastewater. No increased activity of cooling water was recorded in the monitored period.

WASTEWATER

Jaslovské Bohunice premises

Several types of sewages are operating on the JAVYS premises in Jaslovské Bohunice:

- Rainwater – empties into the Dudváh recipient through the Manivier open channel.
- Sewage – empties into the sewage water treatment facility – BIOCLAR, and then into the Váh River through the SOCOMAN pipe collector.
- Industrial – water polluted by crude oil substances empties into the central gravitational oil separator; after purification the water is discharged into the treatment of additional cooling water by clarification in SE-EBO.
- Special – empties into the collection tanks of facilities for the special cleaning of radioactive water for the respective area and after purification and control the wastewater is discharged in an organized manner.
- The resulting SOCOMAN sewer collector – removes other wastewater from the technological facilities for the processing and treatment of RAW, including the low-activity water into the Váh River recipient.

Balance of discharged wastewater

Wastewater from the Jaslovské Bohunice complex is discharged through the SOCOMAN pipe collector and the Manivier open channel under valid Decision No. OU-TT-OSŽP2-2013/00026/GI, issued by the DO in Trnava on 24 October 2013. This permit is valid until 31 October 2023.

Under the current decision, JAVYS does not have the obligation to measure the quantity and quality of the discharged rainwater in the Dudváh recipient. In the event of downtime, failure or unforeseen event on the Socoman pipe collector, technological, sewage (after cleaning), and low-active wastewater can be diverted to the Manivier channel through retention tanks under the approved special program. In this case, the company is obliged to monitor the amount and volume activity of ³H and CFP, along with the chemical indicators of pollution under the requirements of the valid decision on wastewater discharge

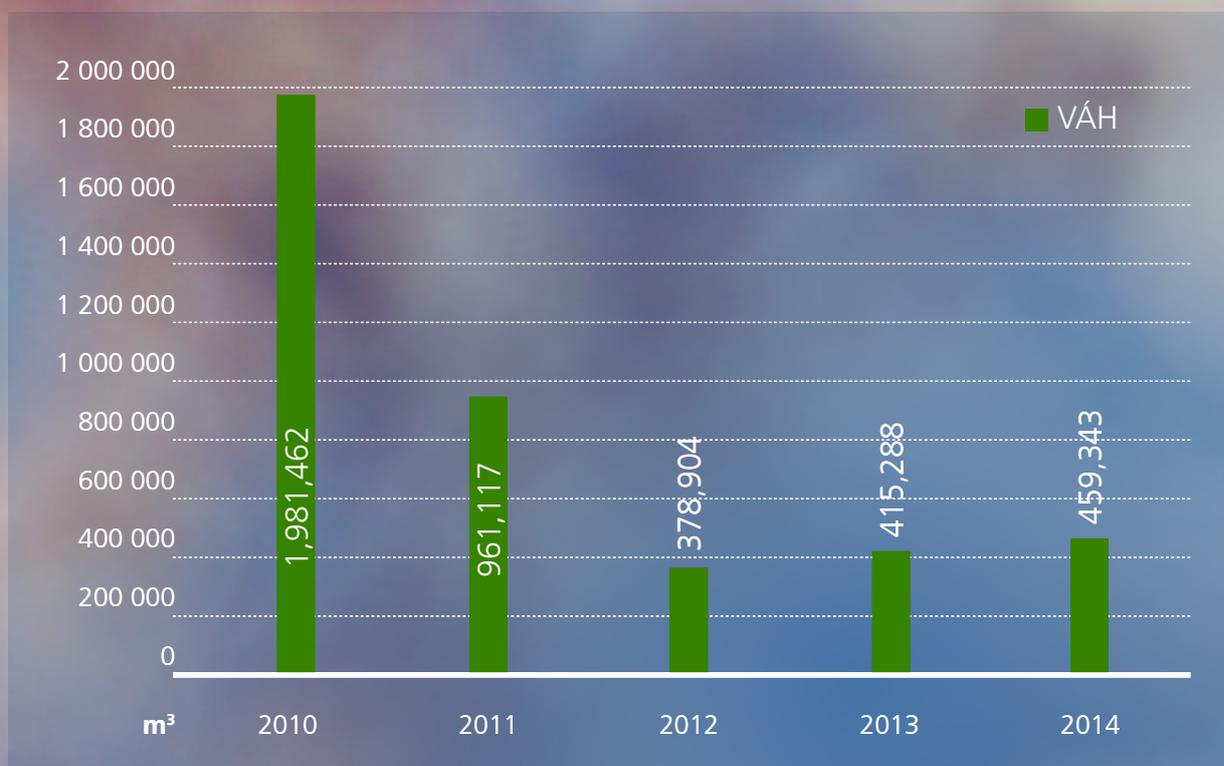
When discharging wastewater from the Jaslovské Bohunice complex to the SOCOMAN pipe channel or through the open Manivier channel (only under a special program), it is necessary to monitor the quantity and quality of discharged wastewater so as not to exceed the limit values set out in the applicable decision on wastewater discharges no. OU-TT-OSŽP2-2013/00026/GI.

The limit values of pollutant indicators in wastewater were not exceeded in the monitored period.

The amount of wastewater discharged into the Váh recipient during 2010 – 2014 (m³)

Recipient	2010	2011	2012	2013	2014
Váh	1,981,462	961,117	378,904	415,288	459,343

The amount of wastewater discharged into the Váh recipient in m³



The average concentration of chemical pollution discharged into the Váh recipient

Chemical pollution indicators	The average concentration of discharged pollution (for 2014)	The maximum allowable concentration (decision OU-TT-OSŽP2-2013/00036/GI)
	mg/l	mg/l
acidity, alkalinity - pH	8.105	9.00
biochemical oxygen consumption - BSK ₅	1.702	8.00
chemical oxygen consumption - CHSK _{Cr}	9.722	30.00
insoluble substances- HS	15.000	20.00
soluble substances - RL	391.472	1,000.00
ammonia - N-NH ₄ ⁺	0.162	4.00
nitrates - NO ₃ ⁻	25.953	50.00
sulphates - SO ₄ ²⁻	25.981	150.00
chlorides - Cl ⁻	19.822	100.00
nonpolar extracted substances - NES	0.021	0.35
total phosphates- P _{total}	0.462	2.00
iron - Fe	0.098	2.00
detergents - PAL	0.050	0.50

The NRAWR Mochovce premises

The NRAWR Mochovce area has a rainwater drainage, which empties into the Telinský Stream through rainwater tanks.

Through Decision No. OOZPŽ/6573/2011, the Chief Hygienist issued an authorization for JAVYS to engage in activities leading to radiation, which includes the activity levels of radionuclides in the discharged water from surface runoff from NRAWR Mochovce. The decision to discharge water from surface runoff was issued by the Regional Office in Nitra, Department of EN. In 2014, 6,129 m³ of water was released from NRAWR from the surface runoff into the Telinský Stream.

The FT LRAW Mochovce premises

Wastewater from FT LRAW is discharged into the SE-EMO sewerage network, then to the wastewater treatment plant and after treatment it is discharged into the environment along with the SE-EMO water.

The amount of rainwater is calculated from the total area of the FT LRAW roofs and average annual precipitation (1.7 mm/day). Rainwater is also channeled into the SE-EMO rainwater sewers together with rainwater from other SE-EMO structures. Rainwater is collected in retention tanks and after measurement it is discharged into the environment.

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

DISCHARGES OF RADIOACTIVE SUBSTANCES INTO THE HYDROSPHERE

Only a small percentage of the permitted limits of liquid discharges was discharged into the surrounding environment from JAVYS' nuclear facilities after repeated control measurements.

The aim of the limit values for discharges is to ensure that under the normal and specific operating conditions, the summary discharges of radioactive substances into the environment from all sources at the Jaslovské Bohunice site are such that the annual limit of radiation does not exceed 12 µSv/year per capita due to the operation of the nuclear facilities in the case of the TPT RAW, A1 NPP and ISFS nuclear facilities, and 20 µSv/year for the V1 NPP nuclear facility due to radioactive releases into the atmosphere and hydrosphere. Radioactive discharges into the atmosphere and hydrosphere are evaluated together.

Limit values for radioactive discharges into the groundwater are listed in LaC for the JAVYS nuclear facilities (TPT RAW, A1 NPP, ISFS, V1 NPP, NRAWR and FT LRAW). They were established by the decisions of the PHA SR and approved by the Nuclear Regulatory Authority of the SR.

The control of activities discharged in the wastewater is carried out by measuring the volumetric activity of tritium, corrosion and fission products and the quantity of water in the collection tanks for TPT RAW, A1 NPP, ISFS and V1 NPP, and the water discharge is also continuously monitored in measuring structures. The low-activity water also includes water discharged from the implementation of standard remediation groundwater pumping from the N 3 well (SO 106), for which permission from DO Trnava was granted under Act No. 364/2004 Coll. on Water.

Discharge of low-activity water from the Jaslovské Bohunice site (including remediation pumping water from the TPT RAW and A1 NPP premises) into the Váh recipient

2014	Radionuclide activity in the Váh recipient wastewater							
	The V1 NPP, ISFS premises				The A1 NPP, TPT RAW premises			
	CFP (MBq)	tritium (GBq)	% of the CFP limit* drawing	% of the ³ H limit* drawing	CFP (MBq)	tritium (GBq)	% of the CFP limit** drawing	% of the ³ H limit** drawing
Total	16.389	9.221	0.126	0.461	6.600	156.686	0.055	1.567

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

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

The Dudváh recipient - discharge of low-activity water

No low-activity water was discharged into the Dudváh recipient in 2014.

Active discharges into the hydrosphere from NRAWR and FT LRAW

Only water from surface runoff is discharged into the NRAWR, and the limits of discharged water indicators were not exceeded during the monitored period. The measured values (³H, ⁶⁰Co, ¹³⁷Cs, ⁹⁰Sr, ²³⁹⁺²⁴⁰Pu) fluctuated at the level of detection limits.

Water at the volume of 6,129 m³ with the total activity of 1.597×10⁷ Bq was released into the hydrosphere, i.e. in the Telinský Stream.

The table shows the percentage recovery of the total activity of individual radionuclides in the 6,129 m³ of the discharged volume from the surface runoff to the LaC. The limits of volumetric activity of radionuclides in discharged waters set out in the principal sanitarian's decision were not exceeded in any index in the monitored period.

Data on the quality of discharged rainwater from the NRAWR

Radionuclide	Discharge activity (Bq)	Annual limit (Bq)	% of the annual limit
³ H	1.53×10 ⁷	1.88×10 ¹⁰	0.08
¹³⁷ Cs	1.10×10 ⁵	2.28×10 ⁷	0.48
⁶⁰ Co	1.00×10 ⁵	2.24×10 ⁷	0.45
⁹⁰ Sr	4.06×10 ⁵	2.44×10 ⁸	0.17
²³⁹ Pu	2.10×10 ⁴	5.56×10 ⁵	3.77

Two types of secondary active liquid radioactive waste are produced in FT RAW. These active media (wastewater, vapor condensate) are not released into the environment (active releases) but pumped into the SE-EMO system for further treatment.

Data on the quality of released active secondary wastewater from FT LRAW to SE-EMO

Radionuclide	Wastewater V = 63.34 m ³	Vapor condensate V = 75.59 m ³	Activity sum	Annual limit Bq	% of the limit
Tritium (Bq)	2.78x10 ⁹	6.07x10 ⁹	8.85x10 ⁹	3.0x10 ¹¹	2.95
Corrosion and fission products (Bq)	8.16x10 ⁸	1.90x10 ⁹	2.72x10 ⁹	3.9x10 ⁹	69.74

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

In 2014 JAVYS did not exceed the limit for tritium activity in discharged water and the discharges of corrosion and fission products in wastewater were below the authorized limits.

MONITORING AND PROTECTION OF GROUNDWATER

The Jaslovské Bohunice premises

The monitoring and protection of soil and groundwater at the Jaslovské Bohunice site and its surroundings has been carried out since 1997, according to the approved monitoring program. The radiation situation in the groundwater of the TPT RAW and A1 NPP premises that has been regularly monitored for a long time is now stabilized. A system of continuous remediation pumping has been operating in the area since 2000.

Activities that gradually removed the primary source of soil and subsequently groundwater contamination were performed within the project of A1 NPP's decommissioning.

An independent study entitled "The Need for Remediation Pumping in the A1 NPP Area" was prepared in order to assess the effectiveness and appropriateness of the implemented groundwater remediation pumping (well N-3), recommending the maintenance of continuous groundwater remediation pumping without changes in the remediation process.

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

Remediation pumping 2014	Drawn CFP activity	drawing of the CFP limit*	drawing of the tritium activity	drawing of the ³ H limit*	The volume of pumped water (m ³)
	(MBq)	(%)	(GBq)	(%)	
Total	2.38	0.02	57.02	0.57	190,662.3

* the "limit drawing" values are intended by a decision, CFP limit = 1.2 x 10⁴ MBq, ³H limit = 1.0 x 10⁴ GBq

The monitoring of the surroundings is carried out in addition to monitoring within the company premises. Based on the results of groundwater monitoring around the Jaslovské Bohunice area, the significant improvement of the radiation situation (reducing the level of tritium volume activity to the insignificant level reaching the natural background level) can be observed near the towns of Malženice and Žlkovce.

The NRAWR Mochovce premises

On the NRAWR premises and nearby there are 52 monitoring wells (groundwater), from which samples were taken under the current schedule for 2014, and subsequently chemical and radiochemical analyses were carried out.

Drainage water, in which the volume activity of individual radionuclides was lower in 2014 than the limit set by the Chief Hygienist in Decision No. OÖZPŽ/6573/2011, is also being monitored at the NRAWR in addition to groundwater.

Drainage water is discharged through the rain tanks, the quantity and analysis included in the discharged water.

The results of chemical and radio chemical water analyzes

Measured constant	Activity value (Bq/l)
^3H	< 5
total beta activity	< 1
^{137}Cs	< 0.80
^{60}Co	< 0.90
^{90}Sr	< 2
^{239}Pu	< 0.06

The results of radiochemical measurements are at the background level, and during operation there was no adverse impact on the environment on the NRAWR premises and in its surroundings.



4.

WASTE MANAGEMENT (INACTIVE WASTE)

In the field of waste management (inactive waste), JAVYS complies with the fundamental regulation – National Council of the Slovak Republic Act No. 223/2001 Coll. on Waste, as amended, and all the following laws and executive regulations, as amended.

The Jaslovské Bohunice premises

Waste management is ensured by collecting, sorting and storing in an area designated for this purpose – the Waste Collection Yard. Waste in the category hazardous is temporarily stored in suitable, technically secure areas prior to final disposal, so as to avoid its negative impacts or danger to human life and health, property and the environment.

The composition of produced waste is directly or indirectly derived from activities related to JAVYS' business.

In 2014, waste in the other (O) and hazardous (H) categories was produced in JAVYS according to the waste catalog (ME SR Decree No. 284/2001 Coll.), Municipal and Biodegradable Waste.

The amounts and types of other waste produced in 2014

Catalog no.	Waste type	Name of waste	Amount (kg)	Recovered (kg)	Disposed (kg)
170604	O	Insulation materials other than in 170601a 3	75,370		✓
170411	O	Cables - aluminum	3,580	✓	
170407	O	Scrap	520,170	✓	
170402	O	Aluminum	50	✓	
170401	O	Copper	142	✓	
170302	O	Bituminous mixtures other than 170301	8,640	✓	
170201	O	Wood	12,510	✓	
170101	O	Concrete	5,740	✓	
160214	O	Discarded equipment other than that mentioned in 160209-13	21,450	✓	
150102	O	PET plastic packaging	200	✓	
150101	O	Paper and paperboard	1,960	✓	
80318	O	Waste printing toner other than 080317	870	✓	
150203	O	Absorbents, filter materials, rags...	20,260		✓
170202	O	Glass	10,750		✓
170203	O	Plastics	3,870		✓
170107	O	Mixtures of concrete, bricks, tiles	10,190		✓
Total amount (kg)			695,752	575,312	120,440
Total amount (%)			100 %	82.69 %	17.31 %

The amounts and types of hazardous waste produced in 2014

Catalog no.	Waste type	Name of waste	Amount (kg)	Recovered (kg)	Disposed (kg)
160601	H	Lead-acid batteries	1,490	✓	
160602	H	Nickel-cadmium batteries	550	✓	
160213	H	Discarded equipment containing HP - fluorescent lamps	350	✓	
150202	H	Absorbents, filter materials, rags containing HS	210	✓	
150110	H	Packages containing HS	430	✓	
60203	H	Ammonium hydroxide	720		✓
90104	H	Fixer solutions	300		✓
130502	H	Sludge from oil separators from water	280		✓
160506	H	Laboratory chemicals consisting of HS, containing HS	340		✓
191206	H	Wood containing HS	6,440		✓
80409	H	Waste adhesives and sealants	710	✓	
80317	H	Waste toner	20		✓
Total amount (kg)			11,840	3,740	8,100
Total amount (%)			100 %	31.59 %	68.41 %

Compared to 2013, the total amount of other waste produced was higher due to the decommissioning of the material, namely recoverable metal waste (fragments of gasometers).

The amount of other and hazardous waste produced during 2010 – 2014



The amount of municipal and biodegradable waste produced in 2014

Catalog no.	Waste type	Name of waste	Amount (kg)	Recovered (kg)	Disposed (kg)
200301	○	mixed municipal waste	38,460		✓
200201	○	biodegradable waste	38,480	✓	
Total amount (kg)			76,940	38,480	38,460
Total amount (%)			100 %	50.01 %	49.99 %

Waste disposal and recovery are ensured by companies that have the appropriate permissions and authorization for dealing with different types of waste. The disposal of municipal waste is carried out by municipalities in their locations (Trnava, Bratislava, Jaslovské Bohunice) in accordance with the generally binding regulations of the municipalities.

The Mochovce premises

In the Mochovce area, mixed municipal waste was produced at NRAWR and FT LRAW in the total amount of 3.172 tons, and waste from cesspool cleaning in the amount of 155 m³.

The export and disposal of waste from the Mochovce premises is provided through the service provider, which is SE-EMO.

5.

MAJOR INDUSTRIAL ACCIDENTS

In the prevention of major industrial accidents, JAVYS complies with the fundamental law – National Council of the Slovak Republic Act No. 261/2002 Coll. on the Prevention of Major Industrial Accidents, as amended, and all the associated laws and executive regulations, as amended.

JAVYS' categorization considering the applicable legislation for MIA

According to Paragraph 5 of Act No. 261/2002 Coll. on the Prevention of Major Industrial Accidents and amending certain laws, Jadrová a vyrad'ovacia spoločnosť has been excluded from the "A" category since 2011 based on the amount of selected dangerous substances in the area.

Even after the exclusion from the "A" category within the meaning of Act No. 261/2002 Coll., the company is obliged to regularly continue monitoring the quantity, fire characteristics and type of selected hazardous substances present in the company, and in case of need for reclassification, send a new notice to the DO.

To monitor the treatment of hazardous chemicals, JAVYS uses the "Management of Chemicals" application. The application contains a code list of all chemical substances and mixtures purchased, used, and also brought in to JAVYS by suppliers and tenants. All chemical substances and mixtures are categorized under the Chemicals Act, the Water Act and the Act on the Prevention of Major Industrial Accidents.

6.

ENVIRONMENTAL IMPACT ASSESSMENT UNDER ACT NO. 24/2006 COLL.

In the area of environmental impact assessment, JAVYS complies with the fundamental law – National Council of the Slovak Republic Act No. 24/2006 Coll. on Environmental Impact Assessment and amending certain laws, as amended. In accordance with the requirements of this Act, there are ongoing processes for evaluating the environmental impact of the proposed new activities categorized under Appendix 8 of the Act, and the assessment of changes to the existing activities under the Notice of Change to the Proposed Activity.

Process evaluation of the Environmental Impact Assessment processes

The Jaslovské Bohunice premises

In Jaslovské Bohunice site, several BIDSF projects were at various stages of the environmental impact assessment process in 2014:

- C7-A3 "Construction of the new high-capacity fragmentation and decontamination facility V1 NPP",
- C7-A4 "Facility for remelting of metallic radioactive waste at the Jaslovské Bohunice site",
- B6.7 "Environmental impact assessment report for the 2nd stage of V1 NPP's decommissioning phase".

The statutory assessment process also included the evaluation of the existing activities "TPT RAW at the Jaslovské Bohunice site" and the proposed change "Completing the ISFS storage capacity at the Jaslovské Bohunice site."

In 2014, ME SR issued final opinions:

- **new proposed activities**
BIDSF C7-A3 "Construction of the new high-capacity fragmentation and decontamination facility V1 NPP"
BIDSF B6.7 "Environmental impact assessment report for the 2nd stage of V1 NPP's decommissioning phase"
- **existing activity**
"TPT RAW at the Jaslovské Bohunice site"

The Mochovce premises

In 2014, the impact assessment process for the existing activity "Final processing of liquid radioactive waste by JAVYS, a.s. on the Mochovce premises", which was completed by issuing ME SR's final opinion.

More detailed information about environmental impact assessment processes is published on JAVYS' website and in the EIA/SEA information system.

7.

ENVIRONMENTAL MANAGEMENT SYSTEM

By maintaining the certified environmental management system according to standard ISO 14001:2004 "Environmental Management Systems," JAVYS performs all activities with a view to protecting the environment. The functionality and implementation of this system has been verified by the independent certification company Det Norske Veritas, which within the total IMS periodic audit in November 2014 confirmed the continued validity of the internationally recognized certificate for EMS granted in 2012.

As part of the process approach, environmental protection is regularly checked and verified by internal IMS audits, during which the environmental management system is examined. Three IMS audits were carried out in 2014, aiming to control the EN protection requirements, two audits performed at the FCC production operation, and one audit at the NRAWR operation. No discrepancies were found during any of the audits.





ABBREVIATIONS

AC	Administrative center
As	arsenic
BIDSF	Bohunice International Decommissioning Support Fund
BL	bituminisation line
Bq	becquerel
BTC RAW	Bohunice Treatment Center of Radioactive Waste
CFP	corrosion and fission products
Cd	cadmium
CO	carbon monoxide
Co	cobalt
Corg.	organic carbon
Cr	chrome
Cs	cesium
Cu	copper
DO	District Office
EIA	Environmental impact assessment
EMS	Environmental management system
EN	the environment
ES	external structures
EÚ	European Union
FT LRAW	Final treatment of liquid radioactive waste
GBq	gigabequerel
³H	tritium
HCl	hydrogen chloride
HF	hydrogen fluoride
Hg	mercury
HS	hazardous substance
IMS	Integrated management system
ISFS	Interim spent fuel storage
JAVYS	Jadrová a vyradovacia spoločnosť, a.s.
JESS	Jadrová energetická spoločnosť Slovenska, a.s.
LaC	Limits and conditions
MBq	megabequerel
ME SR	Ministry of Environment of the Slovak Republic
MIA	major industrial accidents
Mn	manganese
MPB	main production block
NF	nuclear facility
Ni	nickel
NOx	nitrogen oxides
NRA SR	Nuclear Regulatory Authority of the Slovak Republic
NRAWR	National Radioactive Waste Repository
Pb	lead
PFCC	production of fiber-concrete containers
PHA SR	Public Health Authority of the Slovak Republic
PM	particulate matter
PTotal	total phosphorus
Pu	plutonium
RAW	radioactive waste
REO	Regional Environmental Office
SE-EBO	Slovenské elektrárne, a.s., Nuclear Power Plant Bohunice
SE-EMO	Slovenské elektrárne, a.s., Nuclear Power Plant Mochovce
SF₆	sulfur hexafluoride
SO₂	sulfur dioxide
Sr	strontium
SR GR	Slovak Republic Government Regulation
SuRBR	start-up and reserve boiler room
TI	tellurium
TPT RAW	Technologies for processing and treatment of RAW
VS	ventilation stack



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