



Semmelweis University
Sustainability Report 2024

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Executive Statement

Semmelweis University, which has been operating for over 250 years and is based on three main pillars – education, research and innovation, and healthcare – has prioritized sustainability and environmental protection. Due to its size, the University has a significant impact on the environmental performance of Budapest and the region, while continuously shaping the environmentally conscious attitudes of its employees, students, patients, and visitors.

Main environmental indicators and measures:

- **Waste management:** The university generates both hazardous (medical and chemical) and non-hazardous (municipal and selective) waste. The amount of waste delivered increased in 2024, due to the takeover of new units and the expansion of the supply area.
- **Energy Management:** The institution has an ISO 50001 Energy Management System and an electric car fleet. In 2024, the installed solar panels at the university's 9 locations produced a total of 612,071 kWh of renewable energy.
- **Water and air quality protection:** In compliance with legal obligations, the university regularly (in spring and autumn) examines the quality of wastewater discharged into the public sewer, which is evaluated by an accredited company. In order to protect the air, emissions from point sources subject to permits (e.g. boiler chimneys) are continuously measured, and an annual report is prepared.
- **Biodiversity and environmental management:** In order to protect wildlife, 50 bird feeders have been placed in the area of three clinical blocks. The wildflower bee pasture created at the Rehabilitation Clinic also serves to increase biodiversity. In order to adapt to climate change, grass is not cut too often, and drought-tolerant plants are planted to help the soil retain water.

The main successes of 2024:

- **Eternal Eco-School :** The Pető András Gyakorló Elementary School, Vocational School and Dormitory was awarded the title of "Eternal Eco-School " for its long-standing work in educating future generations about environmental awareness.



- **Green Camp:** A green camp was organized by the Family-Friendly University for the children of employees, where the children could learn about the ecological footprint and the problems of overconsumption.
- **International recognition:** In the UI GreenMetric world university ranking for environmental protection and sustainability, Semmelweis University ranked 357th globally and 4th among Hungarian institutions.

The management of Semmelweis University recognizes and embraces the essential need to protect the environment. We have set ourselves the goal of preventing and minimizing the harmful environmental impacts of our activities in healthcare, research and innovation, education, and the processes supporting these.

We are aware that, as the leading medical and healthcare higher education institution in Hungary and Central Europe, we have a responsibility for our narrower and broader environment, as well as for shaping the attitudes of future generations.

In this spirit, the University management is committed to implementing the following:

- **Continuous development and monitoring:** We continuously monitor and analyze our environmental impact, and we continuously improve our performance internationally.
- **Resource optimization and climate protection:** We strive to make the most efficient use of the energy and resources available to us, prioritizing the use of renewable energies and best available techniques (BAT).
- **Responsible waste management: We are committed to reducing the amount of waste we generate. Where this cannot be avoided, we prefer recycling of the material through selective waste collection, and in the case of hazardous waste, we ensure the transfer and registration according to the strictest rules.**
- **Compliance with legislation and standards:** We carry out all our environmental and sustainability activities in full compliance with the applicable Hungarian and international legislation. To achieve our goals, we maintain and develop an integrated management system that complies with the MSZ EN ISO 14001 standard.

- **Attitude formation and support:** We strive to promote environmentally conscious behavior among university citizens through education, campaigns and the publication of good examples. The management encourages university employees and students by setting an example and supporting sustainability initiatives.

The University's management is committed to supporting the implementation of the Environmental Policy and the Green University Program, and provides all the resources necessary for our institution to be at the forefront of environmental sustainability in addition to quality work.

Budapest, 30. 05. 2025.



Simon Mátyás
director security technology

Environmental Policy

Semmelweis University Environmental Policy

Semmelweis University recognizes the need to protect the environment and therefore aims to prevent and minimize harmful environmental impacts. In the case of its main activities, such as education, research and innovation, healthcare and supporting activities essential to their operation, it is committed to regular and effective monitoring of measures and processes that incorporate the aspects and values of environmental protection and sustainable development.

In order to fulfill our commitment, we undertake and implement the following.

- We continuously monitor the environmental impact of our activities, review harmful environmental impacts, and reduce them where possible.
- In order to implement our environmental policy, we implement and enforce specific plans, university regulations, and individual regulations used at the level of organizational units with university citizens. We regularly analyze and review our environmental impacts, based on which we continuously improve our environmental performance.
- We not only improve our environmental performance compared to our own previous performance, but we also strive for continuous improvement in an international context, which is why we participate in the UI GreenMetric World University Ranking , an international ranking list created to evaluate environmental and sustainability efforts.
- We support the purchase and use of environmentally friendly products and the application of best available techniques (BAT). We prefer service providers and suppliers with ISO 14001 certification.
- In our activities, we strive to use the available energy and resources as efficiently and as necessary as possible.
- We enforce and apply environmental protection considerations in the University's development and investment decisions.
- All employees and students of the University strive to reduce the amount of waste generated. Where this is not feasible, we prioritize the utilization of its materials, and to this end, selective waste collection is in place at all our sites.
- We regulate and control the process of collecting hazardous waste and handing it over to a specialized company. We comply with the requirements of the current ADR (Agreement concerning the International Carriage of Dangerous Goods by Road). We carry out these activities in accordance with the legislation in force in Hungary.
- All university citizens receive environmental education. We expect them to comply with environmental requirements in their own areas. We strive to spread environmentally



conscious attitudes and behavior by publishing good examples, participating in training and sustainability campaigns.

- We operate an up-to-date Waste Management Data Reporting System for recording the quantitative and qualitative data of hazardous waste.
- an environmental emergency or accident , we will act in accordance with the provisions of the current Health Emergency Plan and the Operational Safety Plan.
- We strive to minimize the possibility of an accident occurring and reduce its environmental impact through appropriate interventions.
- We inform contractors working on University sites about the environmental regulations in force on University premises and expect them to comply with them.
- All of our senior staff members are exemplary in communicating environmental and sustainability goals to their colleagues. The recommendations and initiatives organized by employees and students in the interest of these goals are also supported and implemented by the University's leaders.
- Our long-term strategic goals are defined in sectoral action plans and the Green University Program documents.
- The University's management is committed to supporting the implementation of this Environmental Policy, providing the necessary resources, and continuously improving its environmental activities in addition to complying with regulations and rules.
- We consider the establishment, operation and continuous development of a regulated and documented integrated management system in accordance with the current MSZ EN ISO 14001 standard to be an important tool for achieving our set goals.

We make our commitment to quality and the environment accessible not only to the citizens of the University, but also to the public on the university website.

Every citizen of Semmelweis University is committed to environmental protection and contributes by setting an example to the performance of quality and environmentally conscious educational, research, innovation and healing activities.

Budapest, February 24, 2022.



1. Introducing Semmelweis University

Semmelweis University is the leading medical and healthcare higher education institution in Hungary and Central Europe. The activities of the more than 250-year-old University are based on three main pillars: healing, research and innovation, and education. This triple unity makes it an internationally recognized knowledge center. Education is provided in six faculties and in three languages, and a third of the 14,000 students come to Semmelweis University from 110 countries and 5 continents. In addition to being the largest healthcare institution in the country, the university, which employs more than 10,000 people, also plays a significant role in research and development and innovation activities.

Due to its size, it has a significant impact on the environmental performance of Budapest and the region, and thanks to the continuously growing number of students, it has the opportunity to shape the mindset of more and more young people regarding sustainability. The solid foundation for all of this is that all citizens of Semmelweis University are committed to environmental protection and contribute by setting an example to the performance of quality and environmentally conscious educational, research, innovation and medical activities.

Compliance with environmental regulations and policies is of paramount importance to the University management, therefore they support the developments necessary to improve environmental performance and provide the resources necessary to implement these efforts. The strategic goals have recently been defined in the Green University Program and the University's Climate Action Plan. The University's Environmental Policy has also been updated and is now available to the public. In summary, the environmental performance presented in this document serves as a starting point for the development of the University's medium- and long-term sustainability strategy.

Education and research can contribute in many ways to improving environmental performance and making the University more sustainable. Numerous measures serve the well-being of employees and students. As a healthcare provider, special attention is paid to the health of university citizens, screening tests and medical consultation opportunities are available. Numerous free or discounted cultural and sports programs complement the well-being measures.

2. Environmental indicators of Semmelweis University

2.1. Waste

Both hazardous and non-hazardous waste is generated at Semmelweis University. Hazardous waste [healthcare (infectious) hazardous waste and waste hazardous due to its chemical and physical properties] is generated during medical, research-innovation and educational activities, while non-hazardous waste (municipal waste and selective waste, including paper, plastic, metal and glass) is generated in other areas of University life, such as food, packaging, and soft drink bottles.

2.1.1. Medical (infectious) hazardous waste

Figure 1 shows the quantitative distribution of healthcare (infectious) hazardous waste generated in 2024, broken down by month.

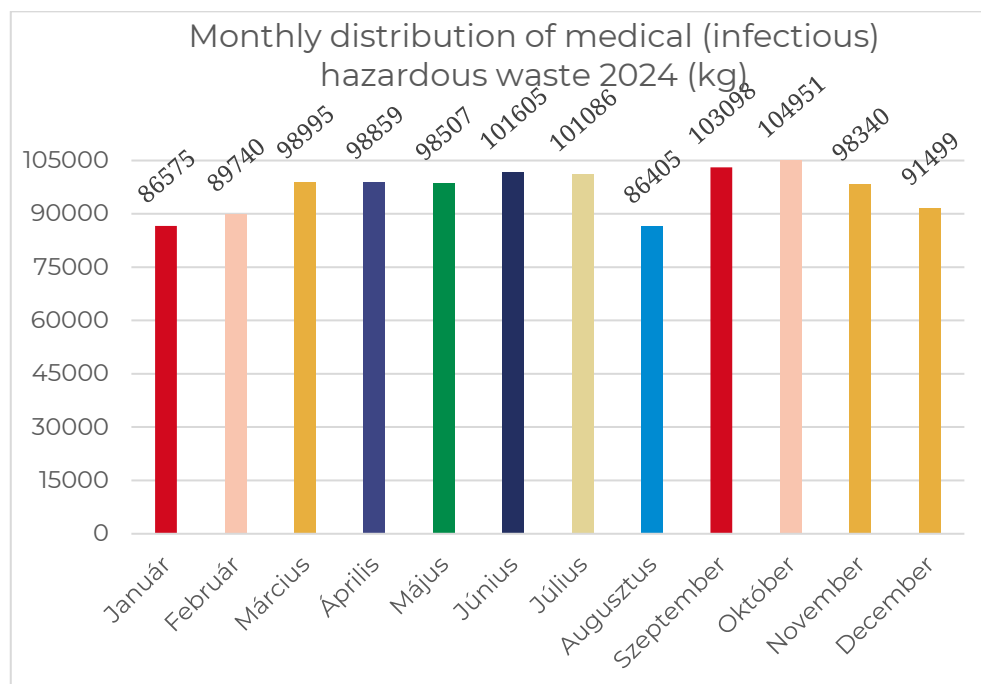


Figure 1: Monthly distribution of healthcare waste in 2024

2.1.2. Chemical hazardous waste

Figure 2 shows the quantitative distribution of waste hazardous due to its chemical and physical properties produced in 2024, broken down by month.

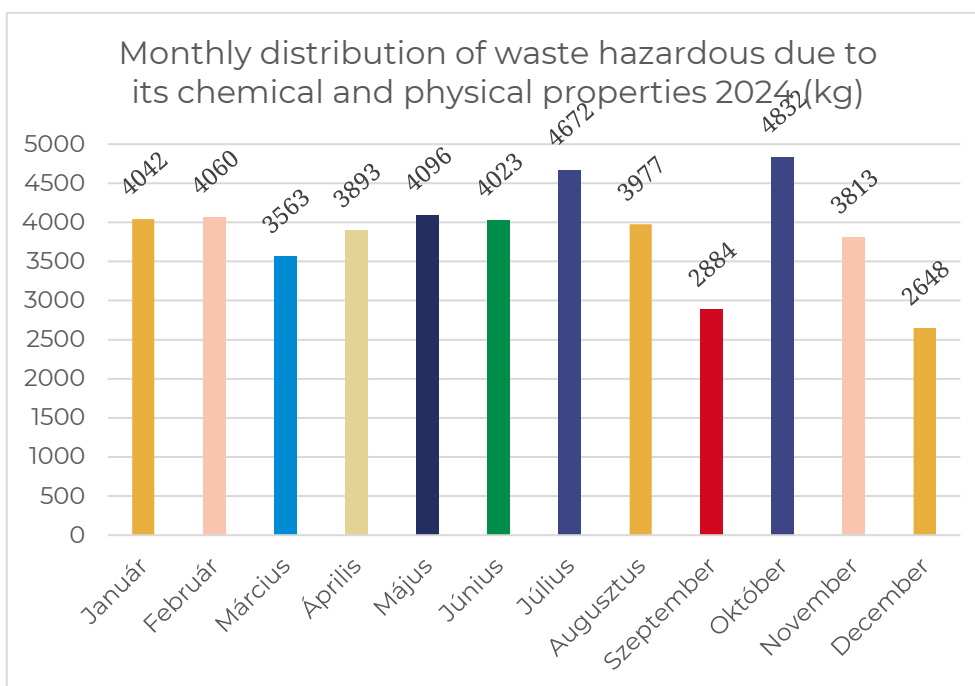


Figure 2: Monthly distribution of chemical hazardous waste in 2024

2.1.3. Non-hazardous waste

Figure 3 shows the quantitative distribution of non-hazardous waste generated in 2024, broken down by month.

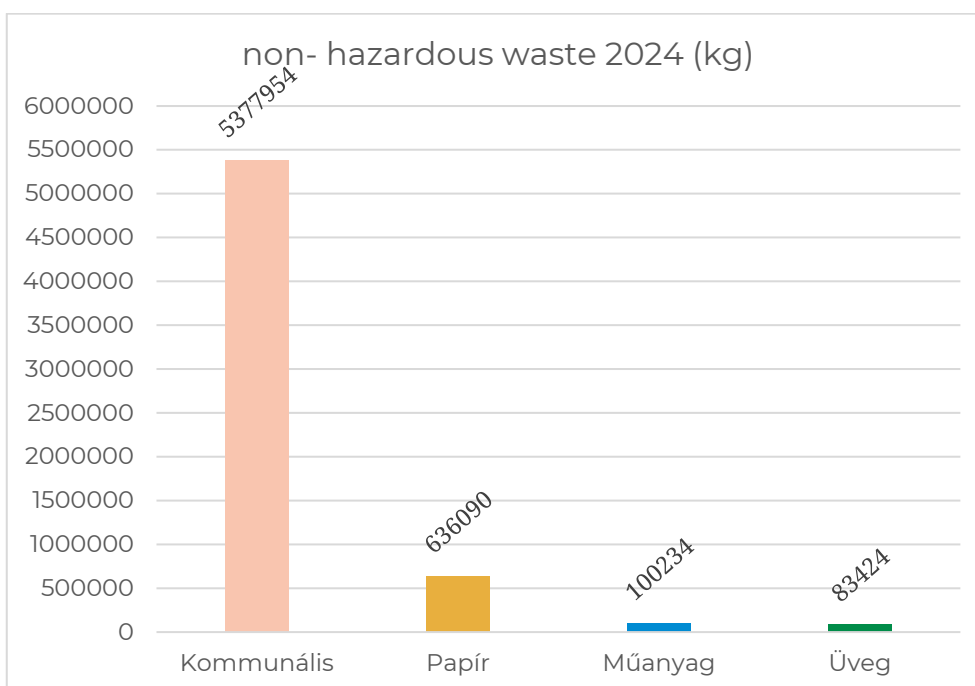


Figure 3: Monthly distribution of non-hazardous waste in 2024

2.1.4. Comparison with waste data from previous years

The impact of the COVID pandemic remained noticeable in the first few months of 2022, and then, as the pandemic subsided, the volume also began to decline, returning to close to the pre-pandemic volume by 2023. The year 2024 was again outstanding, with the highest volume delivered to date. This was due to the new units received and the expansion of the supply area.

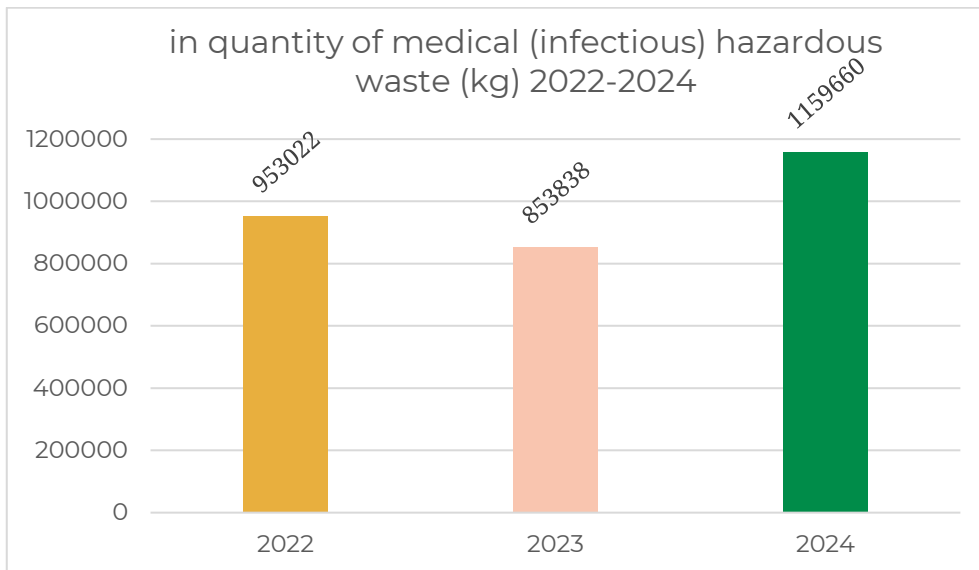


Figure 4: Quantitative change in healthcare (infectious) hazardous waste (kg) 2022-2024

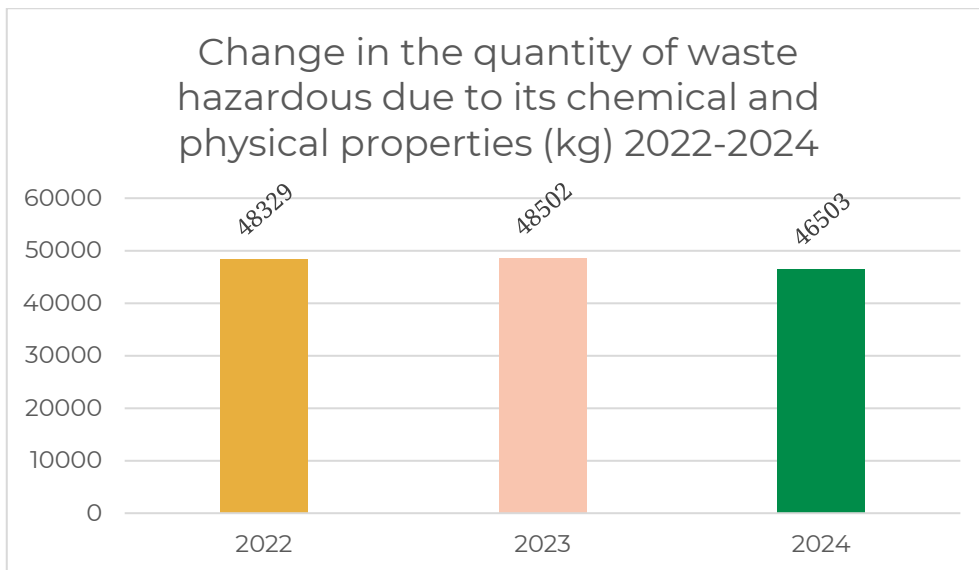


Figure 5: Change in quantity of waste hazardous due to its chemical and physical properties (kg) 2022-2024

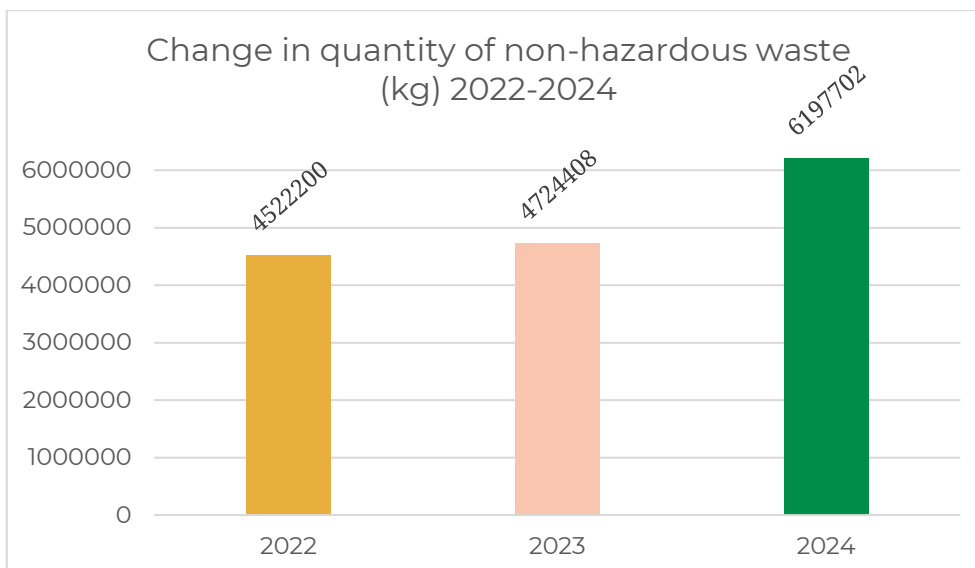


Figure 6: Change in the volume of non-hazardous waste (kg) 2022-2024

2.2. Air

Government Decree 306/2010. (XII.23.) on air protection , every organization whose activities, facilities or products cause or may cause air pollution must measure its air quality. The measurement and licensing of the University's fixed point sources is carried out based on the above-mentioned legislation. The point sources must be licensed and can only be established and operated with a permit. In addition, air protection requirements must be enforced during operation, meaning that our installed fixed point sources (boiler chimneys and exhaust chimneys) are reviewed every three to five years as required by the authority.

In compliance with its legal obligation, Semmelweis University submits the annual air quality protection report to the authority via the OKIR portal by March 31st of each year. During the declaration, we examine the performance and emissions of the 8 stationary point sources subject to permits.

air pollution level limits and emission limit values for stationary air pollution point sources determines the emission limit values, and *Decree 53/2017 (X.18.) FM on the operating conditions and emission limit values for combustion plants with a total rated thermal input of 140 kWth and more but less than 50 MWth* determines the limit values for boiler chimneys located at the University. We must measure nitrogen oxide and carbon monoxide in boiler chimneys.

Semmelweis University is committed to air and climate protection, so in 2022 we prepared our Climate Protection Action Plan, in which we set the following climate



protection strategic goals and action plans: emission reduction; education-attitude formation; waste management-waste reduction; various adaptation objectives.

2.3. Water

Semmelweis University is obliged to conduct self-inspection based on Section 27 (2) a) of Government Decree 220/2004 (VII.21): “The emitter (or discharger into the public sewer) is obliged to conduct self-inspection: who emits or uses hazardous substances according to List I of Annex 1 or priority hazardous substances;”. In addition, Semmelweis University is obliged to prepare a self-monitoring plan in accordance with the provisions of Decree 27/2005. (XII.6.) of the Ministry of Education and Culture and to send it to the Budapest Disaster Management Directorate for approval.

Self-monitoring is carried out at the University in spring and autumn, so we can monitor the quality of wastewater discharged into the public sewer. In 2024, sampling took place in April and October at three sampling points. The measurements and evaluations are also carried out by an external, accredited company. Tables 1-3 show the values of the 2022-2024 measurements at the three measurement points.

1. Table: Results of the BKT02 (Institute of Pharmacognosy) measurement point 2022-2024

	2022		2023		2024	
	April	October	April	October	April	October
Temperature (C°)	19.33	21.5	19.23	22.77	22.83	22
pH	8.19	7.93	8.1	7.93	9.4	8.28
Settled suspended solids (ml/L)	11.67	26.33	41.67	16.17	52.33	6.67
Conductivity (µS/cm)	942.33	1055.67	861.33	861.33	960.33	979
COD (mg/L)	607	1710	742	432	430	543

BOD (mg/L)	85	386	337	91	176	238
Ammonium (mg/L)		24.6	35.4	23.7	56.6	39.5
Nitrite (mg/L)		0.4	2.3	0.3	3	3.1
Nitrate (mg/L)		1	1.3	1	1	1.5
Total nitrogen (mg/L)	87	107	84	79	88	86
SOE (mg/L)	43.27	92.73	34.57	17.67	24.93	26.97
Total phosphorus (mg/L)	8.46	6.02	6.96	7.6	12	8.97
Sulfide (mg/L)	0.01	0.17	0.15	0.08	0.02	0.03

2. Table: Results of the BKT16 (Institute of Pathology and Experimental Cancer Research) measurement point 2022-2024

	2022		2023		2024	
	April	October	April	October	April	October
Temperature (C°)	22.03	22.50	22.27	22.33	23.7	25.37
pH	8.21	8.38	7.79	7.95	7.48	7.89
Settled suspended solids (ml/L)	2.87	67.5	1.03	16.2	8.67	3
Conductivity (µS/cm)	936	962.33	783.33	863	748.67	949.33
COD (mg/L)	446	1030	673	805	600	690
BOD (mg/L)	106	234	296	290	192	375
Ammonium (mg/L)		98	22.1	20.2	19.4	27.4
Nitrite (mg/L)		1.6	3.4	0.2	0.05	0.05
Nitrate (mg/L)		1.8	2	1.4	1	1

Total nitrogen (mg/L)	97	185	79	94	40	69
SOE (mg/L)	21	105.17	82.17	46.70	23.73	31.33
Total phosphorus (mg/L)	8.11	26.7	3.66	5.58	3.1	4.4
Sulfide (mg/L)	0.01	0.25	0.05	0.2	0.01	0.16

3. Table: Results of the H2 (Hőgyes Tómb) measurement point 2022-2024

	2022		2023		2024	
	April	October	April	October	April	October
Temperature (C°)	21.7	24	26.37	22.7	24.27	22.67
pH	7.86	8.16	7.96	7.85	8.15	8.39
Settled suspended solids (ml/L)	8.6	9.67	5.67	3.53	5.07	2
Conductivity (µS/cm)	715.33	1050.67	611	819.33	568.67	788.67
COD (mg/L)	386	1260	1140	239	3000	253
BOD (mg/L)	90	652	337	41	960	107
Ammonium (mg/L)		10.1	35.4	3.5	2.7	31.4
Nitrite (mg/L)		0.2	2.3	0.1	0.23	0.5
Nitrate (mg/L)		1	1.3	1	1	1
Total nitrogen (mg/L)	74	82	84	40	22	75
SOE (mg/L)	19.10	33.3	34.57	7.53	5.23	9.50
Total phosphorus (mg/L)	4.05	3.03	6.96	2.56	1.26	4.12
Sulfide (mg/L)	0.01	0.02	0.15	0.02	0.01	0.01

In case of exceeding the limit value, the case will be investigated and the following measures will be implemented: we will hold ad hoc, repetitive training, during which we will specifically draw the attention of the organizational units to the correct handling of chemicals, and we will inform the head of the affected unit(s) about the case, requesting action from the organizational unit under his/her management. Due to the exceeding of the limit value, a sewerage fine was imposed on the University. *Figure 7* shows the amount of water purchased by the organizational units.

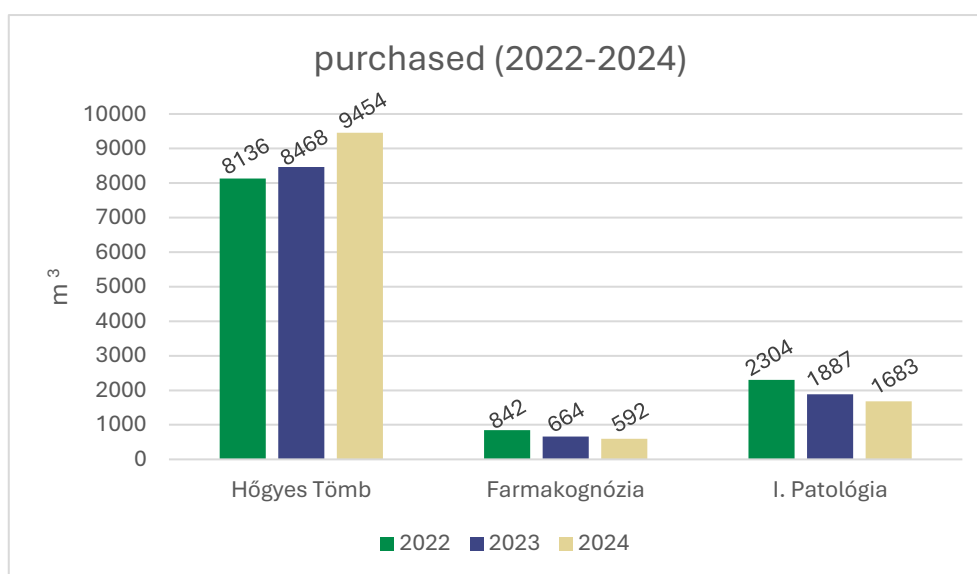
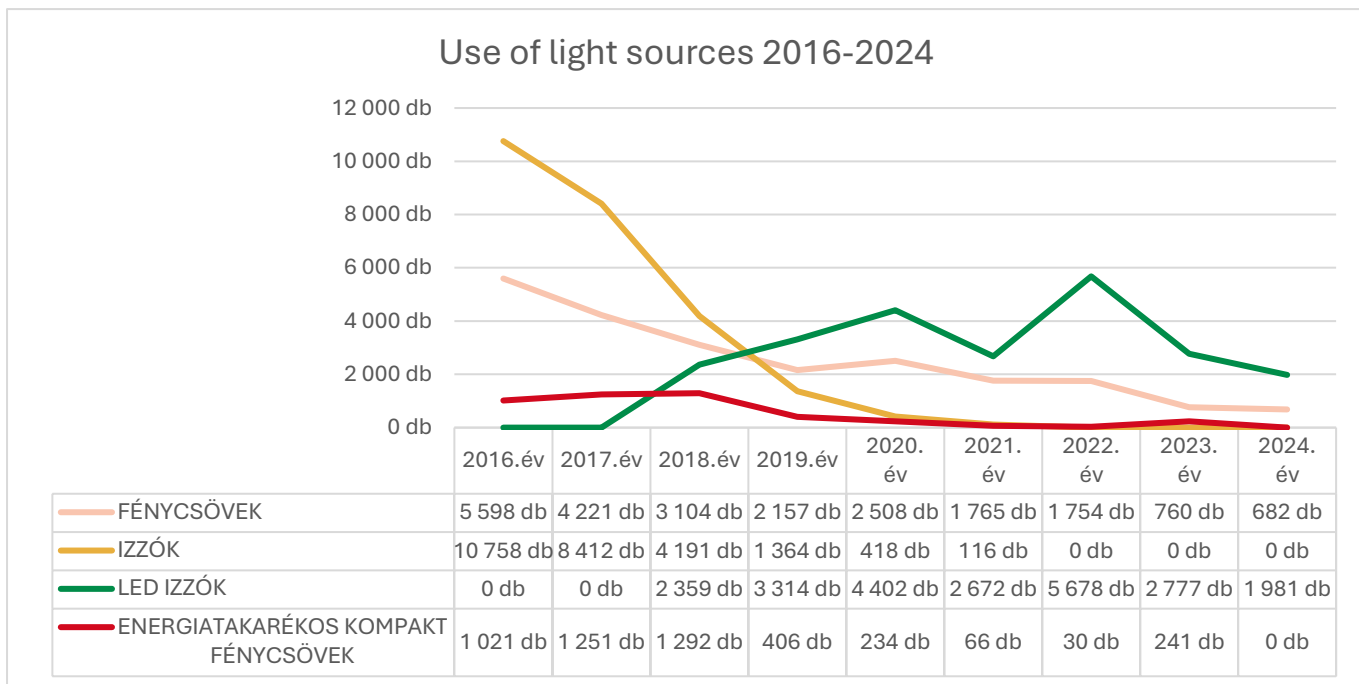


Figure 7: Amount of water purchased by organizational units at measurement points between 2022 -2024

2.4. Energy

In terms of sustainable development, our University has the ISO 50001 Energy Management System. In terms of energy consumption, we pay special attention to the use of renewable energy, which is why the University has solar panels installed at several sites and a fleet of electric cars. In several cases, the amount of energy produced by solar panels was influenced by the renovation/modernization works of the given building. A survey of the buildings connected to the University and their solar panels has been carried out. In 2024, the installed solar panels produced 612,071 kWh of renewable energy at a total of 9 sites of Semmelweis University.

Figure 8 shows that the replacement of traditional light sources with energy-saving bulbs and fluorescent tubes began in 2016.



**8. Quantity of light sources used on the premises of Semmelweis University
Between 2016-2024**

2.5. Soil and wildlife

In order to preserve wildlife, a total of 50 bird feeders have been placed in three different areas: Outer Clinical Block (20 pcs), Merényi Clinical Block (20 pcs), Inner Clinical Block (10 pcs). These will be filled with seeds in the winter.

We consider it important that trees are only cut down when necessary, and during construction we pay special attention to root protection so that the trees are not damaged under any circumstances. During the nesting season – in compliance with legal obligations – we do not carry out tree care work.

In order to preserve biodiversity, we have created a wildflower bee pasture at the Rehabilitation Clinic, and in other areas of the University, we are replacing annual plants with perennials.

In order to adapt to climate change and the summer heat, we do not cut the grass too often, and drought-tolerant plants are planted, which play an important role in soil water retention and water reserves. This is also supported by the use of decorative mulch, which, in addition to increasing the soil's water retention capacity, provides additional nutrients to the soil and provides a habitat for insects.

In the event of necessary tree fellings, the wood is ground up and later used as mulch on the sites. Fallen leaves and plant clippings are returned to nature in the

park forest of the Merényi Clinical Block. During the winter anti-slip treatment of decorative paving, calcium chloride is used

for plant protection .

3. Legal compliance

3.1. What laws do we have to comply with?

The University must comply with numerous legal regulations, the most important of which are the following:

- Act LIII of 1995 on the general rules of environmental protection
- Act LIII of 1995 on the general rules of environmental protection
- Act LX of 2007 on the Implementation Framework of the United Nations Framework Convention on Climate Change and its Kyoto Protocol
- Act CLXXXV of 2012 on waste
- Government Decree 387/2021. (VI. 30.) on the promulgation of Annexes "A" and "B" to the European Agreement concerning the International Carriage of Dangerous Goods by Road and on certain issues of its domestic application
- Decree 25/2014. (IV. 30.) of the Ministry of Finance on the dangerous goods transport safety advisor
- 12/2017. (VI. 12.) EMMI Decree on waste management activities related to waste generated by healthcare providers
- 11/2017. (VI. 12.) EMMI Decree on waste management activities related to pharmaceutical waste generated during the supply of pharmaceuticals to the public
- Government Decree 225/2015. (VIII.7.) on the detailed rules for certain activities related to hazardous waste
- Government Decree 306/2010 (XII. 23.) on air protection
- 6/2011. (I.14.) VM. Regulation on the rules related to the examination, monitoring and evaluation of air pollution levels and emissions from stationary air pollution sources
- Government Decree No. 278/2014 (XI. 14.) on the content and method of preparation of the national report on greenhouse gas emissions and climate change, on the procedure for providing data, and on the fine to be paid in case of violation of the data provision obligation
- Government Decree No. 306/2010 (XII. 23.) on air protection
- Act LVII of 1995 on Water Management
- 43/1999. (XII. 26.) KHVM Decree on the calculation of the water resource contribution
- Government Decree No. 219/2004 (VII. 21.) on the protection of groundwater
- 8/2002. (I.30.) KöVIM Decree on the rules and fees for the training and examination of dangerous goods transport safety consultants
- 25/2014. (IV. 30.) NFM Decree on the dangerous goods transport safety advisor

3.2. University regulations

There are various regulations within the University, the most important of which are the Semmelweis University Environmental Policy, the Environmental Protection Regulations, the ADR Manual, and the Waste Management Instructions of all institutions and sites.

Semmelweis Egyetem ADR Kisokosa



4. Successes of 2024

4.1. Eternal Eco-School

The András Pető Gyakorló Primary School, Vocational School, Unified Conductive Pedagogical Methodological Institute and Dormitory of Semmelweis University were awarded the title of Eternal Eco-School in 2024, which is the result of many years of tireless and enthusiastic work. The recipients of the title try to keep the interests of the living world in mind as much as possible during their work and strive to cause as little environmental impact as possible with their activities and contribute to solving global environmental problems by educating future generations along these principles. The principles of sustainability are applied in all areas of the institution, both during and outside of school hours, during camps and meals, and in the operation of the institution.



4.2. Green Camp

The Family-Friendly University organized the Green Camp in the summer of 2024, during which the children of university employees could participate in various environmental and nature conservation activities. During the camp, they could calculate their ecological footprint, talk about various environmental problems, and learn about overconsumption. During the camp, the children's task was to free Glóbi - a plush figure personifying our planet - which they successfully accomplished.



4.3. UI GreenMetric World University

UI GreenMetric is a university ranking conducted by the University of Indonesia since 2010, which evaluates universities based on their environmental and sustainability performance. It is grouped into six themes, which are energy management, environment and infrastructure, waste management, water management, transportation, and education and research. These themes contain a total of 96 questions that we need to evaluate the University. Semmelweis University ranked 357th globally and moved up to 4th place among Hungarian universities, compared to 5th place in 2023. The achieved result is the joint success of all employees of the University, as each of us contributes to achieving the best possible result with our activities.

