

Medical Waste in the Czech Republic: Current Trends and Future Challenges

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Summary

The article deals with the analysis of the current production and management of medical waste (European Waste Catalogue Sub-Chapter 18 01) and reveals trends that reflect the setting of the waste market in the Czech Republic. New legislative changes in the field of waste and health care safety will influence these trends. Furthermore, the article outlines other external environmental factors that will have an impact on healthcare waste management, especially in relation to the requirements for environmentally sound operation of healthcare facilities.

Keywords: medical waste, national waste legislation, environmental responsibility

Introduction

The current field of waste management is changing and this also applies to medical waste and its material flows. The specificity of medical waste lies in the health risks associated with the hazardous properties of the waste, in particular its infectivity, toxicity, carcinogenicity, mutagenicity, ecotoxicity, which are associated with the following types of medical waste: infectious waste, sharps, chemicals, unusable pharmaceuticals, radioactive substances, etc., and therefore the area needs to be addressed not only from an environmental but also from a public health point of view. The above-mentioned types of waste are generated in various types of health and social care facilities, such as hospitals, clinics, outpatient facilities (individual physicians), small facilities (ambulance services), long-care facilities, nursing homes, etc., and other facilities as pharmacies. However, such waste may also be generated by health care provided in the patient's own social environment. The aim of this article is to answer the question of what is the current situation in the Czech Republic with regard to the production of medical waste and how has the production of medical waste been affected by covid-19 pandemic. The second part presents the newly introduced external factors influencing the trends in waste production, i.e. the regulatory legal framework and the waste disposal and recovery infrastructure. The paper concludes this analysis by translating the above external impacts into challenges for the current requirements for environmentally sustainable operation of healthcare facilities.

Methods

The analysis of waste production is based on the data obtained from the Information system of waste management (ISOH) and its public part (VISOH), which is managed by the Czech Environmental Information Agency (CENIA) under the Ministry of Environment. The healthcare facility segmentation is based on data and registries from the Institute of Health Information and Statistics of the Czech Republic (IHIS CR). The information on incinerators performance is based on data from the Czech Hydrometeorological Institute (CHMI). The chosen period is in some part of the analysis fluctuating between 2012 and 2013 given by the availability of reliable data from the public registries.

The medical waste description corresponds to the European Waste Catalogue (EWC) chapter 18 (Healthcare waste), respectively sub-chapter 18 01 (wastes from natal care, diagnosis, treatment or prevention of disease in humans). In Table 1 is a list of analysed codes for the given period. The authors are aware that other types of wastes are produced within the healthcare facilities (municipal type of waste, packaging etc.) The situation on the medical waste market during the period under consideration (i.e. acceptable costs of hazardous waste disposal) has favoured the observation of trends in the production of medical waste within chapter 18 01 alone.

Table 1: Wastes from natal care, diagnosis, treatment or prevention of disease in humans

EWC code	Description
18 01 01	sharps (except 18 01 03)
18 01 02	body parts and organs including blood bags and blood preserves (except 18 01 03)
18 01 03*	wastes whose collection and disposal is subject to special requirements in order to prevent infection
18 01 04	wastes whose collection and disposal is not subject to special requirements in order to prevent infection (for example dressings, plaster casts, linen, disposable clothing, diapers)
18 01 06*	chemicals consisting of or containing dangerous substances
18 01 07	chemicals other than those mentioned in 18 01 06
18 01 08*	cytotoxic and cytostatic medicines
18 01 09*	medicines other than those mentioned in 18 01 08
18 01 10*	amalgam waste from dental care

Source: European Waste Catalogue, * Hazardous (special) wastes

Even though only the waste originators who exceed the statutory limits (100 tonnes of non-hazardous waste, 100 kg or 600 kg of hazardous waste) report their production to the system, the system also detects the production of waste by those who do not report, from the reports of authorised entities. Waste production was presented in the form of graphs due to the conditions of data provider. This data source was also used to monitor the different ways of medical waste treatments. In this case, the data reported in the annual reports on waste production and management in each year by authorised entities, i.e. operators of waste collection, treatment, recovery or disposal facilities, were used. The individual treatment methods are recorded in the reports by means of so-called "treatment codes". Treatment codes for medical waste are described in Table 2. The codes are based on Eurostat's Manual on waste statistics - a handbook for data collection on waste generation and treatment.

Table 2: Treatment codes for medical waste and their brief description (Eurostat).

Disposal and recovery codes for medical waste (18 01)	
D1	Deposit into or onto land, e.g. landfill
D8	Biological treatment resulting in final compounds or mixtures which are discarded by any of the operations numbered D1 to D12
D9	Physic-chemical treatment resulting in final compounds or mixtures which are discarded by any of the operations numbered D1 to D12, e.g. evaporation, drying
D10	Incineration on land
D13	Blending or mixing prior to submission to any of the operations numbered D1 to D12
D14	Repackaging prior to submission to any of the operations numbered D1 to D13
N3	Transfer to another authorised person (notifier) – excl. transporter
N5	Stock balance as at 31 December of the reporting year
N7	Cross-border transport of waste to an EU Member State from the Czech Republic
R1	Use principally as a fuel or other means to generate energy
R2	Solvent reclamation/regeneration
R4	Recycling/reclamation of metals and metal compounds
R12	Exchange of wastes for submission to any of the operations numbered R1 to R11

Results

The quantity of medical waste generated in the Czech Republic between 2013 and 2021, based on data from the electronic waste register collected at ISOH, which is partly accessible to the public as VISOH, is shown in Figure 1. The ISOH data in combination with the IZIS CR registers allow a segmentation of waste generation by type of facility. For 2020-2021, VISOH data were used to extrapolate the share of each type of facility. The details of the analysis¹ (in Czech only) are available to the public.

The total production increased by 35% from 2013 to 2021 and the growth of this production is practically linear. The impact of the covid-19 pandemic and the shift between the "other non-hazardous" (O) and "hazardous" (N) categories can be observed, despite reductions in some types of health care.

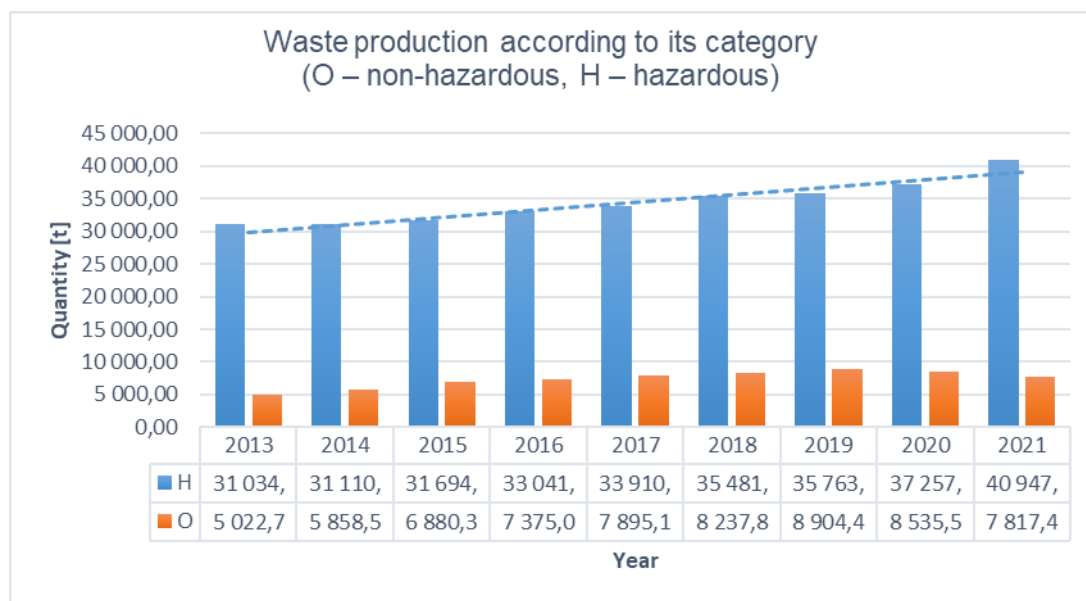


Figure 1: Total waste production of medical waste in the Czech Republic according to its hazard category

Figure 2 shows in more detail the contribution of each type of healthcare facility to the total production of healthcare waste. Hospitals are the largest producers of healthcare waste. They produce more than 55% of all healthcare waste. Other major contributors are long-term care facilities and homes for the elderly (more than 22%). Other healthcare and non-healthcare facilities produce more than 20% of healthcare waste each year. Home care accounts for 1 – 2% of reported generation. In the legend, the item "Other medical waste producers" includes e.g. pharmacies, physiotherapists etc., and the item "Non-healthcare producers of similar waste" refers to tattoo parlours, cosmetic services, pedicure, etc.

For the years 2020 – 2021, the contributions of each type of facility have only been estimated on the basis of historical trends established using data from ISOH up to 2019. The data source for 2020 – 2021 is the public part of the Czech Waste Management Information System - VISOH.

In terms of the share of individual types of medical waste in total production, waste with the catalogue number 18 01 03, i.e. waste whose collection and disposal is subject to special requirements with regard to the prevention of infection, is in the first place. This type of waste represents more than 70% of the total yearly medical waste production.

Waste with the catalogue number 18 01 04, the collection and disposal of which is not subject to special requirements with regard to the prevention of infection, comes second in the ranking. An upward trend can be observed for this type, which was interrupted by the covid-19 pandemic period. The increasing production of waste 18 01 04 can be observed in particular in long-term care facilities and homes for the elderly. This waste is usually disposable health material and absorbent hygienic products which, after the decontamination, is classified under the above catalogue number. An overview of the production of individual waste types in tonnes in the Czech Republic between 2013 and 2021 is shown in Figure 3.

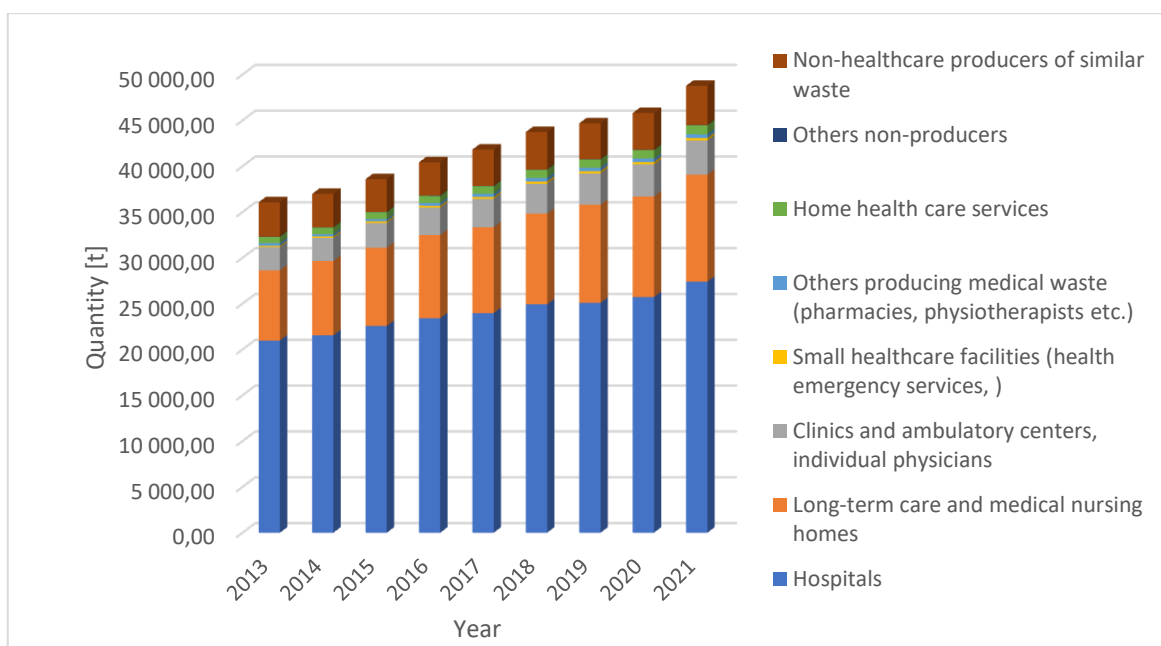


Figure 2: Share of different types of healthcare facilities on the total production of medical waste between 2013 – 2021.

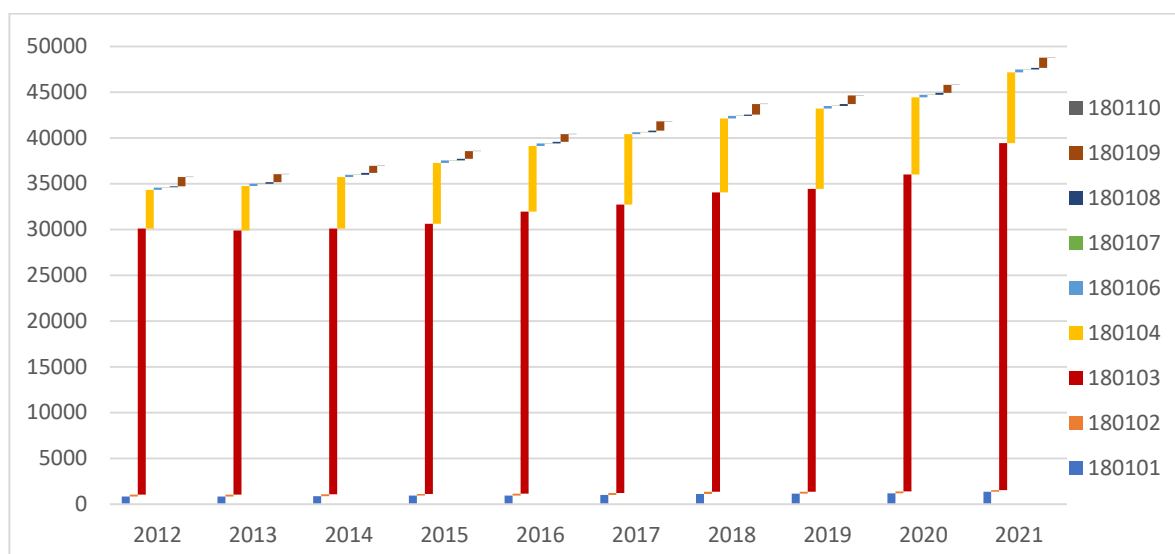


Figure 3: The proportion of each type of waste in the total production of medical waste between 2013 and 2021, according to the number of EWC codes.

Another perspective is to look at the generation of different types of medical waste by the type of health care facility, that was segmented in Figure 2. The hospitals and the long-care centres and homes for elderly were chosen for further visualisation in Figure 4 and Figure 5.

Figure 4 focuses on the share of each type of waste in hospitals, where 18 01 03 waste is clearly dominant. Figure 5 analyses the production of healthcare waste in long-term care facilities and homes for the elderly, where the production of 18 01 04 waste is increasing faster than that of infectious waste with catalogue number 18 01 03.

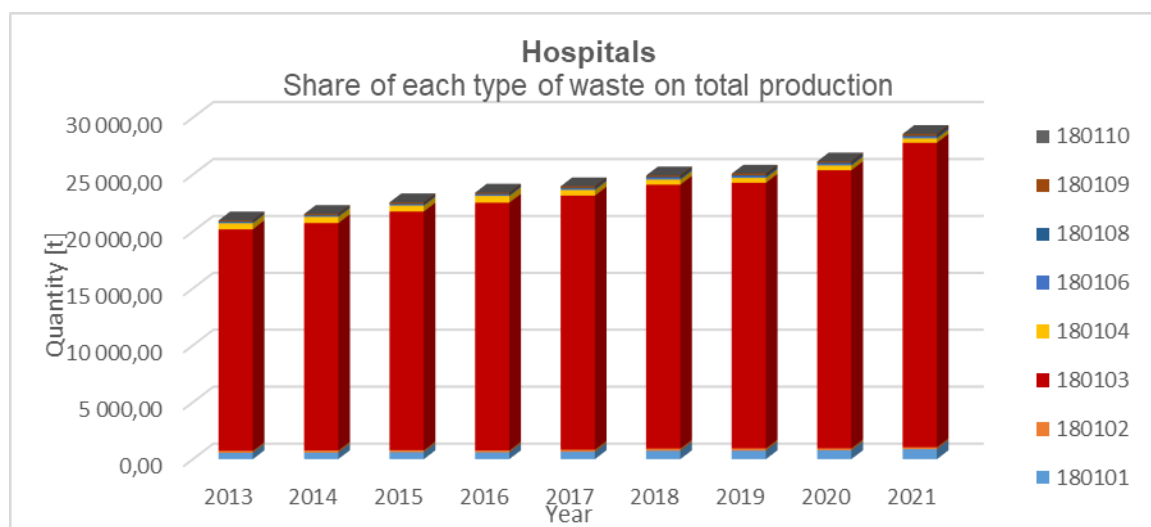


Figure 4: Share of individual waste types by EWC codes in the total production of medical waste in the Czech Republic in hospitals 2013 – 2021.

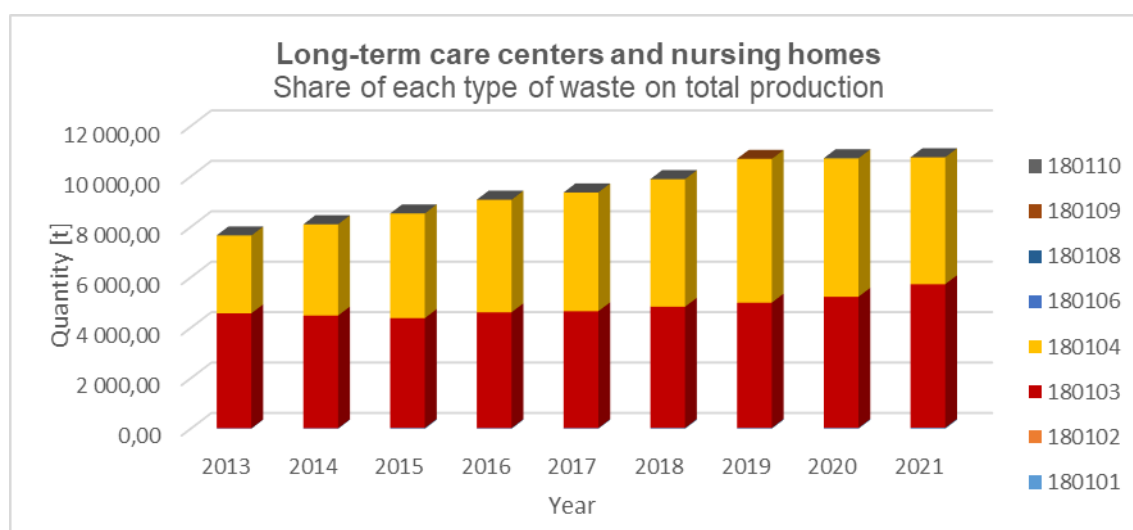


Figure 5: Share of individual waste types by EWC codes in the total production of medical waste in the Czech Republic in long-term care centers and nursing homes between 2013 – 2021.

The waste registered as medical in the national system could be tracked by the national digital waste information system ISOH. All disposal and recovery paths are listed in Table 3 and Table 3a, based on data from ISOH and its public part VISOH respectively, according to Eurostat codes. A description of the selected codes for each of the management operations from Table 3 is given in Table 2. The public part of the VISOH information system does not cover all codes, so not all codes can be observed continuously.

Table 3 shows an analysis of the total quantity of medical waste that was recovered or disposed of in the Czech Republic in the period 2012 – 2019. Most of the waste was incinerated (D10), which accounts for 60 – 70% of the total final treatment of medical waste each year. Waste treatment prior to recovery or disposal accounts for about 7 – 19%. 5 – 11% was used for energy recovery, but the trend is declining. On the other hand, landfilling increased by 9 – 16% each year. The ISOH data in Table 3 show that the total generation of medical waste is increasing at an average annual rate of 3.8%. For these waste transfers, N3, i.e. the handling of waste in connection with transport, storage, etc. by other authorised persons who are obliged to declare the waste (in addition to the generators and the operators of disposal or recovery facilities), is growing at an average rate of about 6.2%. This is practically double the rate. In practice, this means that on average each batch of medical waste is handed over to an authorised person twice before it reaches a facility for final disposal.

Table 3: Management of medical waste in the Czech Republic in tonnes per year, 2013 – 2019

Treatment code	2013	2014	2015	2016	2017	2018	2019
D1	3 503.33	3 924.66	4 979.81	5 346.89	6 118.56	6 553.82	6 921.31
D10	24 260.57	25 148.34	26 540.14	27 528.50	28 383.51	28 990.64	26 923.28
D13	13.24	20.25	19.97	17.38		15.60	22.62
D14	3 026.63	2 372.94	2 435.82	3 079.04	2 981.85	3 506.26	611.36
D15	1.34						
D8	60.18	50.71	56.74	52.35			
D9	120.25	88.99	626.98	640.34	734.39	1 227.63	6 470.56
N3	66 084.92	67 942.26	71 154.23	80 513.40	84 333.16	90 397.88	94 561.86
N5	423.35	600.72	871.54	715.07	726.30	776.39	539.32
N53	182.71	74.56	104.10	262.49	211.76	138.88	286.31
N7	1.84	1.45	0.50	1.67	14.97	2.03	0.01
R1	4 283.23	4 654.10	2 900.25	2 718.89	2 330.89	2 639.21	2 298.07
R10		2.35					
R11	0.28						
R12	68.47	227.76	575.51	559.61	1 181.07	579.61	1 426.55
R13		0.04					
R2	1.58	10.25	7.07	1.24	0.08	0.05	
R3		0.00				33.94	

Data source: ISOH

Table 3a adds information on the changes in the management of medical waste according to the information collected in the national VISOH system during the covid-19 pandemic period. It can be seen that the proportion of waste generated from the "other" category decreased and that the generation of "hazardous" waste increased, thus necessitating an increase in the use of disposal methods other than landfilling (D1), in particular incineration (D10) and energy recovery (R1).

Table 3a: Management of medical waste in the Czech Republic in tonnes per year, 2020-2021

Treatment code	2020	2021
D1	6 592.97	4 120.04
D10	28 136.70	33 314.53
D13	14.63	21.02
D14	463.15	295.66
D9	6 406.52	5 529.55
R1	2 441.14	3 301.15
R12	1 593.70	1 858.99
N7	1.67	0.83

Data source: VISOH

Legislative and regulatory framework for medical waste management

The most important legislative change regulating the framework of waste management in the Czech Republic is Act No. 541/2020 Coll. on Waste, as amended, which entered into force on 1 January 2021 (hereinafter also referred to as the Act or the Waste Act).

An entirely new Volume 10 entitled "Waste from Health and Veterinary Care" has been added to this basic act. This includes the obligation to draw up waste management guidelines as part of the operating regulations under the Public Health Act; it deals with waste from home care, the monitoring of waste in pharmacies in the form of waste records, and there is also an emphasis on training in healthcare facilities.

The details are set in implementing decrees. Decree No. 8/2021 on the Waste Catalogue and the Evaluation of Waste Properties (Waste Catalogue) and Decree No. 273/2021 on the Details of Waste Management.

Section 72 of Decree No. 273/2021 Coll. on medical waste deals with the scope of waste sorting, waste sorting equipment, the obligation to remove waste from the workplace on a daily basis, as required by Decree No. 306/2012 Coll. on the conditions for the prevention and spread of infectious diseases and on hygiene requirements for the operation of health care facilities and social care facilities, as amended.

Highly infectious waste must be treated immediately after generation by decontamination using certified technological equipment.

The annexes to the Decrees address the elements of the guidelines for the management of healthcare waste, the categories of personnel for the purpose of training for the management of healthcare waste and the requirements for the content of the training.

The treatment of healthcare waste is covered in more detail in Section 74, which requires that the operating rules of a facility designated for waste management that carries out decontamination of hazardous properties HP9 infectivity must specify the method and frequency of control of the effectiveness of decontamination, including the establishment of physical, chemical and biological indicators. The procedures shall also include the establishment of a method for recording the progress of each decontamination cycle. In addition, this paragraph provides that the operator must continuously check the setting of the technical parameters that affect the effectiveness of the decontamination process and have the facility inspected at least once a year by an authorised service company, recording the checks carried out in the facility logbook and archiving the documents. Finally, effective decontamination is defined by reference to the decontamination efficiency classes in the Annex to this Decree.

Section 75 deals with the management of household medical waste, but is limited to pharmaceutical waste. It specifies the method of collection, the reimbursement of costs to pharmacies by the regional government and the method of reporting this waste.

The expected development of health care in the patient's own social environment due to the demographic situation is so far only reflected in a few principles in Section 89 of the Act.

Thus, in addition to the legislation, the issue of healthcare waste management is covered by the partially updated and expanded "Methodology for the management of waste from medical, veterinary and similar facilities", published in January 2023, which was prepared by the National Institute of Public Health in Prague (NIPH) in 2022² and addresses in more detail the various aspects of the entire process of managing this waste based on the WHO recommended procedures. The extension, entitled "Guidelines for the management of waste from selected health care activities in outpatient health care facilities, activities of epidemiological significance and in the patient's own social environment", defines in more detail the fulfilment of the obligations of the Act in environments where waste falling under cat. no. 18 01 is also generated and managed. The methodology is based on the original methodology certified by the Ministry of Environment in 2016.

Challenges for the environmentally sound operation of healthcare facilities

On the side of the regulation of healthcare supplies and technologies for healthcare providers in the Czech Republic, new challenges are emerging in this respect, which are related not only to the new legislation on responsible procurement (amendment to Act No. 134/2016 Coll.), but also to the legislation on safe and quality medical devices (MDR Regulation, 2017) and cost-effective medical technologies (HTA Regulation, 2021). In this regard, procedural management approaches, robust quality management systems and regular accreditations are always a definite advantage for healthcare providers.

As part of the transition to a circular economy, further legislative measures to regulate the waste market can be expected in the medium term. An analysis by the Ministry of Environment³ shows that prices in the healthcare waste market and waste policies aimed at reducing landfill will significantly change the input economic parameters for assessing the economic viability of selected waste management options.

For example, the conditions that have led to the massive expansion of decontamination and energy recovery facilities in other countries⁴ have been economically, environmentally and health-wise beneficial in the market environment of a given country. In the current situation, such investments need to be carefully reassessed in the context of the transformation of the waste and energy market in the shift towards a low-emission circular economy, avoiding the creation of barriers to new, complex technological solutions at the producer or treatment level, while respecting the waste management hierarchy. However, even here a certain caution in capacity planning is needed, as repeatedly mentioned in the new OECD report⁵ on the transformation of waste management in the Czech Republic.

Discussion

The analysis for the years 2012 – 2019 shows a relatively stable regulatory and market environment. However, future projections, especially the “Business as Usual” (BAU) scenario based on observed trends, could be dominated by several later events. These events are largely beyond the control of health care providers. The resulting combined pressure does not favour a smooth transition towards environmentally sound and sustainable operation of health care facilities. The recent important factors that would shape the medical waste production trends are: the covid-19 pandemic situation between 2020 – 2022, the major change in waste legislation that came into force on 1 January 2021, the phasing out of landfill, including for non-hazardous and decontaminated healthcare waste. The other factors that could have a certain impact on the medical waste is a limited capacity of the infrastructure for the recovery and final disposal of medical waste, as already addressed by previous analysis in 2016 by team from Brno University of technology⁶. In addition, the general conflict between the need for safe solutions for patients in acute care and environmentally sound solutions for public health continues. For example, the new stringent requirements of the Medical Device Regulation (EU) 2017/745 has a mixed impact on waste market. Due to the complex regulatory requirements for entry and operating at the EU market the medical device producers could even more favour single-use devices and disposable materials over reusable and reprocessed ones as could be seen from MedTech Europe survey from 2022⁷.

Looking specifically at the high percentage of 18 01 03 hazardous waste generation, this high percentage may be due to the practice of health care facilities obtaining consent for non-sorting of waste and therefore there was a tendency for facilities to include other waste under this catalogue number. This is no longer allowed under the new legislation. During the covid-19 pandemic period, when we evaluate the outputs, we also see the production during the emergency and therefore the hypothetical maximum production of hazardous waste. We can now expect a decrease in the proportion of hazardous waste, not only because of the above-mentioned legislation, but also because of the increase in prices in the healthcare waste disposal market.

An interesting fact is the increasing trend of waste with catalogue number 18 01 04, non-hazardous waste, whose collection and disposal is not subject to special requirements regarding infection prevention. This change could be explained by the fact that hazardous healthcare waste is prevented

and the waste is treated with various decontamination technologies; another reason for the increase in the production of this type of waste is the legislative awareness that such waste is not segregated as normal mixed municipal waste.

With regard to the future monitoring of production trends in different health care facilities, it is important to be aware of another factor with an impact on data interpretation. Since the 1st of January 2021, healthcare facilities are obligated to report their production if their waste generation exceeds 600 kg of hazardous waste per year. As a result, doctors who operate outpatient facilities that generate less than this threshold limit are no longer required to report the disposal of medical waste. As a consequence, their output will only be addressed indirectly, as mentioned above, through reports submitted by authorised persons.

If we consider the subsequent management of the resulting healthcare waste, apart from the covid-19 pandemic, the new legislation had a significant impact on this management, especially the first version of the Implementing Decree to the new Waste Act No. 273/2021 Coll. on the details of waste management. On 7 August 2021, 16 days after this version came into force, a large number of health care facilities were faced with a major change in the management of waste from waste group 18 01, with a complete ban on landfilling of waste from the "other" non-hazardous category. Compliance with this requirement proved to be very problematic in practice.

The transfer of generated waste to authorised persons, where the waste is not directly treated or recovered, by so-called "mobile facilities" (mainly for waste collection and for some larger healthcare facilities, mandatory digital registration of waste generation and transport) appears to be necessary. With the exception of a few hospitals, the majority of medical waste producers usually do not have their own final waste treatment facilities. However, repeated transport without any treatment suggests some inefficiency in waste logistics, with economic implications for health care facilities and an undesirable increase in the environmental impact of waste transport. The results of the reported treatment method show a twofold increase in the quantity of waste handled, especially for mobile equipment. In absolute terms, the total quantity of medical waste handled each year is more than double the total quantity produced. This trend has only been observed since 2016. This means that there are always one or two more stages, mainly mobile waste collection facilities, between the final medical waste treatment facilities and the waste producer. For some segments i.e. types of health care providers this is necessary and quite understandable, e.g. collection from outpatient facilities, pharmacies, surgeries and small facilities. The trend suggests that this is happening for virtually all medical waste generated, which is inefficient both from an economic point of view and in terms of minimising the impact of medical waste management. It should be noted that this trend is reinforced by the fact that mobile facilities typically provide not only physical transport, but also other administrative and reporting tasks associated with the transport of healthcare waste, which is a popular ancillary service for generators. However, this situation is being addressed by regulating the operation of mobile facilities through the new Waste Act and therefore the effects of this change should be observed in the forthcoming ISOH data. Another approach to analysis is the Stock-Flow Model published by CENIA⁸, which includes the transfer of waste volumes in terms of the home region of the waste generator and the region of the final treatment facility. However, during the course of the project, the data for such an analysis was not available to the public and analysts outside the MoE CR, even for research purposes.

The external dependency of healthcare facilities on the services of off-site facilities for final disposal, decontamination or recovery of waste was at least 87.5% in 2020 and 2021. This is based on data from the Czech Hydrometeorological Institute (CHMI), in cooperation with the Czech Environmental Inspectorate (CEI), which is compiling and continuously updating a database of waste thermal treatment plants⁹. The database covers the on-site hospital incinerators, too and thus can track the quantity of waste disposed of on-site at healthcare facilities. The other waste treatment facilities are mainly operated and owned by large waste management companies, which adds to the fragility of the medical waste market.

An increase in waste generation can be expected due to new legislation on the safety of medical devices and the resulting pressure on the use of single-use medical devices. At the same time, there is a noticeable fluctuation in the use of thermal disposal of medical waste during the 2020 – 2021 covid-19

pandemic period and, conversely, a decrease in other industrial activities that use hazardous waste incinerators in combination with medical facilities. A significant impact can also be expected as a direct result of changes in waste legislation. In particular, the waste hierarchy will have to be followed since, as mentioned above, landfilling will not be possible in the future and waste will have to be treated in other ways. In this context, it is necessary to point out the current development of suitable thermal disposal capacities, which, due to their ownership structure and technical condition, will not be obliged to accept infectious or, more importantly, other non-hazardous (e.g. decontaminated) healthcare waste in the face of growing demand from a large number of producers of a wide range of other types of waste for which the possibility of landfilling will also end.

In terms of other options for a sustainable approach to the operation of a particular healthcare facility, efforts are limited by the above-mentioned external conditions of the energy, waste and medical device and materials markets, to which need to be the healthcare providers adapted to or made more resilient. These external influences include the ongoing shortage of staff currently responsible for a range of operational tasks related to waste management.

Conclusions

The article presents the long-term trend in medical waste production, including the two years of the covid-19 pandemic. The new legislative framework and the limited capacity of disposal and recovery facilities are sector-specific external factors that would influence the future behaviour of medical waste producers. At the same time, the possibility of segregation of certain material flows from the 18 01 sub-chapter provides scope for hazardous waste reduction within the healthcare facilities. At the same time, the demographic situation calls for structural changes of the health care for the aging population and more of the care might take place in the social environment of the patient or with the assistance of the home care services. Such services would partly decline the non-hazardous medical waste to municipal waste chapter and thus reduce the quantity of medical waste generated by healthcare facilities. However, there will be countervailing pressures on healthcare providers to increase healthcare waste as a result of the new requirements of the Medical Devices Regulation regarding the safety of the healthcare provided.

Due to the factors described above, future research must take into account the fluctuation of medical waste registration to more than one chapter of the EWC within the healthcare facilities when analysing the production trends from the ISOH and similar information systems. A part of the non-hazardous production of medical waste may be out of reach of the current mandatory registration and control, as it becomes regular household waste from home care in the social environment of the patient. The analysis showed the complexity of external factors affecting the management of medical waste at the facility level. The minimisation of healthcare waste is linked to medical material flows that are extensively regulated. In order to provide safe and environmentally sound healthcare, these challenges need to be further discussed and systematically addressed in a sectoral context.

List of Abbreviations

BAU	Business as Usual
CEI	Czech Environmental Inspectorate
CENIA	Czech Environmental Information Agency
CHMI	Czech Hydrometeorological Institute
EWC	European Waste Catalogue
(V)ISOH	(Public) Information System of Waste Management (in Czech: Veřejný informační systém odpadového hospodářství)
IHIS CR	Institute of Health Information and Statistics of the Czech Republic
MDR	Medical Device Regulation (EU) 2017/745

MoE CR	Ministry of Environment of the Czech Republic (In Czech Ministerstvo životního prostředí České republiky)
NIPH	National Institute of Public Health (in Czech: Státní zdravotní ústav)
OECD	Organization for Economic Cooperation and Development
WHO	World Health Organisation

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Odpad ze zdravotní péče v České republice: Současné trendy a budoucí výzvy

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Souhrn

Článek se zabývá analýzou aktuální produkce a nakládáním se zdravotnickými odpady (odpady s katalogovým číslem 18 01) a odhaluje trendy, které poukazují na nastavení trhu s odpady v České republice. Nové legislativní změny z oblasti odpadů, ale i bezpečnosti zdravotní péče budou tyto trendy ovlivňovat. Dále jsou v článku nastíněny další faktory vnějšího prostředí, jež budou mít vliv na oblast nakládání s odpady ze zdravotní péče, především v návaznosti na požadavky na environmentálně odpovědný provoz zdravotnických zařízení.

Klíčová slova: zdravotnický odpad, odpadová legislativa, environmentální odpovědnost