

6. Nuguzhinov Zh., Vatin N., Bakirov Zh., Khabidolda O., Zholmagambetov S., Kurokhtina I. Stress-strain state of bending reinforced beams with cracks. Magazine of Civil Engineering. 2020. 97(5). Article No. 9701. DOI: 10.18720/MCE.97.1

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PROBLEMS OF UTILIZATION AND PROCESSING OF MEDICAL WASTE IN KARAGANDA

In Kazakhstan today, there is a situation when for the treatment of dangerous medical waste of classes B and C does not need permits, does not require mandatory environmental assessment, compliance with sanitary zones, development of permits and even obtaining a license for waste management. It turns out that any organization of any form of ownership can engage in activities in the field of medical waste disposal. There is no proper control and a clear procedure for selecting technologies, while the use of the best available technologies, the most efficient, environmentally friendly, resource-saving and least expensive from an economic point of view is provided for the treatment of solid household waste and other waste [1].

Medical waste is all waste generated in medical institutions, medical laboratories, and biomedical institutions, as well as waste from small or scattered sources. The main part of medical waste hospitals. Improper use of medical waste and its disposal pose a serious threat to the spread of the disease infectious agents, waste recycling workers, medical workers, patients and society. Open incineration and incineration of waste without proper control over environmental pollution poses a risk to waste recycling workers as well as contact with toxic atmospheric pollutants and ash. [2]

As I said, in order to properly dispose of medical waste, it is necessary to solve the problem by analyzing the existing waste management system in medical organizations and developing a program for effective management of medical waste in medical institutions. As an example, I chose the Multidisciplinary Hospital No. 1 of the city of Karaganda.

In accordance of the Charter of the Multidisciplinary Hospital №1, the subject of activity is the implementation of medical activities in accordance with the legislative and other regulatory legal acts of the Republic of Kazakhstan, including the procedures for providing medical care and standards of medical care. The purpose of the institution is to ensure the rights of citizens to medical care in accordance with the territorial program of state guarantees of free provision of medical care to the population of the Karaganda region.[3]

Analysis of the medical waste management system in the Multidisciplinary Hospital №1. In accordance with the requirements of regulatory documents, the system of medical waste management in the Multidisciplinary Hospital №1 includes the following components:

1. Appointment of responsible persons for the management of medical waste
2. Submission of statistical reports to the Ministry of Health of the Karaganda region
3. Primary accounting of medical waste
4. Waste collection and disposal scheme in Multidisciplinary hospital №1
5. Training of medical personnel on medical waste management
6. Conclusion of contracts with organizations, and transportation of medical waste

Since the Multidisciplinary Hospital №1 uses a hardware method of neutralization, epidemiological hazardous waste of class B is not decontaminated in the hospital departments. Used syringes in the unassembled form are placed in solid non-piercing containers, after separating the needles with the help of puller needles. Yellow bags, as well as containers, are filled to three-quarters and the employee responsible for collecting waste closes it with a special screed to exclude the spillage of waste.

Every year, about 4 tons of medical waste are in circulation on the territory of the hospital. Table 3 provides information on the treatment of medical waste for 3 years (2017-2019) in the Multidisciplinary Hospital №1.

Different classes of medical waste in different volumes can be generated in different departments of the hospital.

According to the sanitary regulations, hospital waste is divided into two categories: infected and other, uninfected components, the disposal of which is carried out through common channels for municipal waste.

Infected persons are transported in double-lined containers, under strict supervision, and must be incinerated within 48 hours.

Table 1 - Information on medical waste management for 2017-2019

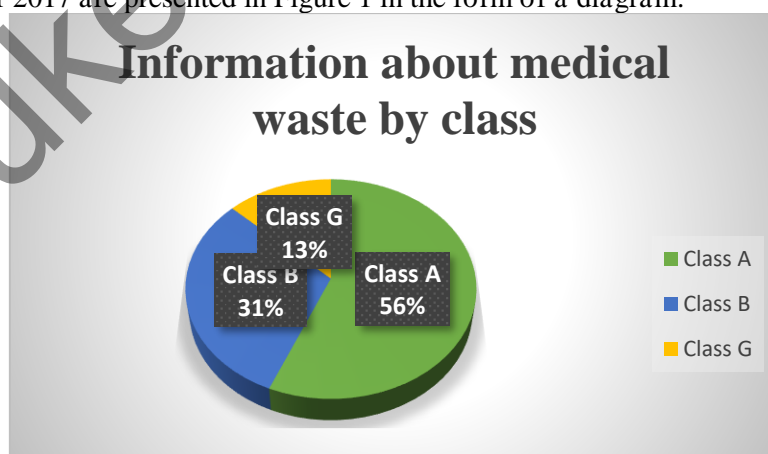
Year	Amount of accumulated medical waste (tons / year)
2017	4200
2018	4221
2019	3948
Total:	12366
<i>Note-based on the author</i>	

Organization of decontamination of medical waste, transportation. After collecting medical waste in the departments in disposable soft yellow bags marked "class B waste", which are fixed in special containers, they are moved to the room with the installation of hardware neutralization and destruction of medical waste. Since the Multidisciplinary Hospital №1 uses a hardware method of neutralization, epidemiological hazardous waste of class B is not decontaminated in the hospital departments. Used syringes in the unassembled form are placed in solid non-piercing containers, after separating the needles with the help of puller needles. Yellow bags, as well as containers, are filled to three-quarters and the employee responsible for collecting waste closes it with a special screed to exclude the spillage of waste.

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They move Class B waste outside the hospital units in closed containers. Disposable containers must be marked with the inscription "Waste. Class B".

In three years, Hospital №1 accumulated a total of 12,366 tons of medical waste. The decrease in the amount of accumulated medical waste is associated with a reduction in the bed stock in 2017. In the Multidisciplinary Hospital №1, medical waste is formed, which differs in its qualitative, quantitative and morphological composition. Data on the quantitative composition of medical waste by waste class for 2017 are presented in Figure 1 in the form of a diagram.



Note-based on the author

Figure 1. Information about medical waste by class in the Multidisciplinary Hospital №1

After analyzing the data on waste collection, we can say that Class A waste accounts for 56% of all hospital medical waste. Recently, the amount of Class G waste has increased, accounting for 13% of the total waste structure. The remaining types of Class B waste account for 31%.

Methodology for designing a system for effective management of medical waste management. Some authors consider management as "a purposeful, planned, coordinated and consciously organized process that contributes to achieving maximum effect with minimal resources, effort and time" [4]. Methods of designing organizational systems are based on different approaches. One of them is a systematic approach based on a holistic view of the system. The effectiveness of the designed control system can be evaluated according to the main criteria: efficiency, manageability, stability and adaptability [5].

Development of a hospital-based medical waste management system. To introduce an in-hospital system of medical waste management, it is necessary to identify responsible persons for the planning and disposal of waste within the medical organization. Responsible persons are appointed by the order of the head of the institution. Different levels of responsibility are defined for designated officials. So, for the treatment of various types of medical waste, different specialists will be appointed responsible.

The article describes the methodology for designing an effective management system, an in-hospital waste management system, a program for effective management of medical waste management, which provides an economic justification for the design version of the device for the disposal of medical waste, provides instructions for the management of medical waste, a program for production control and a training program for personnel on the effective management of medical waste. The result of the proposed study was the developed program for the effective management of biological medical waste in the Multidisciplinary Hospital №1. As a social effect, we can mention the observance of environmental and epidemiological safety in the treatment of medical waste of class B, Multidisciplinary Hospital №1.

References:

1. Electronic resource: <http://ecogofond.kz/wp-content/uploads/2020/09/Informacionnyj-obzor-za-2019-god.pdf>
2. JORGE EMMANUEL Compendium of Technologies for Treatment / Destruction of Healthcare Waste // Health and Environment. 2018.
3. Electronic resource: <http://www.karhospital.kz/>
4. Rusakov N. V. Problems of waste management in medical and preventive institutions / N. V. Rusakova. M., 2009. 1
5. Pettet, A. in: Institute of sewage purification. [Electronic resource:] - URL / A. Pettet// 1956, part 1, p. 36.
6. Abramov V. N. Waste disposal of medical and preventive institutions. Moscow: Mainland, 1998.

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ҚАРАҒАНДЫ ҚАЛАСЫНЫҢ СИНАНТРОПТЫ ҚҰСТАРЫН ЗЕРТТЕУ

Қарағанды Қазақстандағы ірі өндірістік қалалардың бірі, географиялық координаты 49,8019 солтүстік ендікте 73,1021 шығыс ұзындықта теңіз бетінен 544 м биіктікте орналасқан. Халық саны 501095 құрайды. Қарағанды қаласының халық саны артқан сайын қаланың көлемі еселеніп ұлғаюда және ондағы құрылыстық құрылымдар жылдан жылға қарқынды өсуіне байланысты антропогендік ландшафтарда көбейді. Біз соңғы мәліметтер мен әдебиеттерге талдау жасауымыздың нәтижесінде Қарағанды қаласының орнитофаунасы толық зерттелмеген дігі белгілі болды. Қарағанды облысы бойынша құстар тізімі мен сипаттамасы толықтыруды қажет етеді. Осыған байланысты қала бойынша кең таралған синантропты құстар зерттелді. Олардың негізгі бейімделуін, таралуын, демографиялық құрылымы мен популяциялық динамикасын зерттеудің теориялық тұрғыдан ғана емес практикалық медициналық жағынан да маңыздылығы айқындалды. Көп жылдық антропогендік факторлар жиынтығы құстардың сандық динамикасы мен таралуына әсер етумен қатар түрлік құрамының өзгеруі мен ауысуына әкеледі. Синантропты құстар олар тұрақты мекендерде, адам құрылыс жайларында (тұрғын үй, дүкен, азық түлік сақтау қоймаларында) бір бірімен тәуелді немесе жартылай тәуелді популяция құрып тіршілік