Medical Waste Management Policy in the Republic of Kazakhstan

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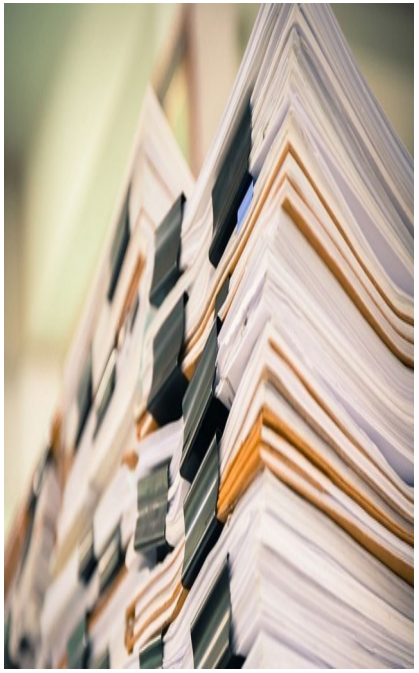
In 1979, the World Health Organization (WHO) classified medical waste (MW) as hazardous and indicated the need for special services for its treatment.

The Basel Convention in 1992 identified 45 types of waste, the list of which opens with clinical waste.

Basic documents regulating medical waste management in healthcare organizations



1) Code of the Republic of Kazakhstan No. 360-VI З РК dated July 7, 2020 ON PEOPLE'S HEALTH AND HEALTHCARE SYSTEM

(Article 100. Medical Waste Management, Article 101. Requirements for Persons Engaged in the Collection, Transportation, Storage, Neutralization, Disposal and (or) Use of Medical Wastes)

2) Code of the Republic of Kazakhstan No. 400-VI З РК dated January 2, 2021 ENVIRONMENTAL CODE OF THE REPUBLIC OF KAZAKHSTAN (Chapter 19, Article 296)

3) Law of the Republic of Kazakhstan No. 389 dated February 10, 2003 On Joining of the Republic of Kazakhstan to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (adopted on 22.03.1989)

4) Sanitary and Epidemiological Requirements for Health Facilities SR approved by Order of the Ministry of Health of the Republic of Kazakhstan dated 11.08.2020. No. ҚР-ДСМ-96. (Chapter 7. Sanitary and Epidemiological Requirements for Waste Collection, Neutralization and Storage at Health Facilities)

5) Sanitary and Epidemiological Requirements for Production and Consumption Waste Collection, Use, Application, Neutralization, Transportation, Storage and Disposal SR approved by Order of the Ministry of Health of the Republic of Kazakhstan dated 25.12.2020 No. ҚР-ДСМ-331. (Paragraph 2. Sanitary and Epidemiological Requirements for Medical Waste Collection, Transportation, Storage, Neutralization and Use)

6) Order of the Minister of Health of the Republic of Kazakhstan No. ҚР ДСМ-219/2020 dated November 30, 2020 On Approval of the Rules for Providing Information on Medical Waste.

7) ST RK 3498-2019 Hazardous Medical Waste. Requirements for Separate Collection, Storage, Reception, Transportation and Disposal (Neutralization). DEVELOPED AND INTRODUCED by the Technical Committee for Standardization 102 Production and Consumption Waste.

Article 100. Medical waste management

1. Medical wastes refer to a type of production and consumption wastes generated in the process of providing medical services and medical manipulations.

2. Medical wastes are divided into 5 hazard classes according to its degree of danger:

1) Class A - non-hazardous medical wastes, similar to solid domestic wastes;

2) Class B – hazardous (epidemiological) medical wastes;

3) Class C – extremely hazardous (epidemiological) medical wastes;

4) Class D – toxicologically hazardous medical wastes with a composition similar to industrial wastes;

5) Class E – radioactive medical wastes.

Medical wastes of classes B - E are hazardous wastes.

3. Sanitary and epidemiological requirements for medical waste collection, transportation, storage, neutralization and use are determined by sanitary rules approved by the state body in the field of sanitary and epidemiological welfare of the population.

4. Owners of wastes in accordance with the environmental legislation of the Republic of Kazakhstan shall provide information to the authorized body in the field of environmental protection in the form of an annual report in the field of medical waste management (hereinafter - the report) for their inclusion in the State Register of Production and Consumption Wastes.

5. Information on medical wastes is provided annually as of January 1 by March 1 of the year following the reporting year in electronic and (or) paper form.

6. Waste owners ensure the completeness, continuity and reliability of these reports.

7. The procedure for providing information on medical wastes is determined by the state body in the field of sanitary and epidemiological welfare of the population.

Article 101. Requirements for Persons Engaged in the Collection, Transportation, Storage, Neutralization, Disposal and (or) Use of Medical Wastes

1. Activities for the collection, transportation, storage, decontamination, and use of medical wastes are carried out by individuals and legal entities.

2. Individuals and legal entities engaged in the collection, transportation, storage, neutralization, disposal and use of medical wastes must obtain permits in accordance with the procedure established by the legislation of the Republic of Kazakhstan on permits and notifications before commencing activities.

3. Qualification requirements for individuals and legal entities engaged in the collection, transportation, storage, neutralization, disposal and use of medical wastes are established by the state body in the field of sanitary and epidemiological welfare of the population.

5 classes of medical wastes according to the degree of danger:

CLASS A Non-hazardous, similar to household waste	CLASS B Epidemiologically moderately hazardous (risky)	CLASS C Epidemiologically extremely hazardous	CLASS D Wastes similar to industrial wastes	CLASS E Radioactive medical wastes
Wastes not in contact with bodily fluids of patients, infectious patients, non-toxic wastes.	Potentially infectious wastes. Materials and instruments contaminated with secretions, including blood.	Materials in contact with patients with especially dangerous infections.	Expired medications.	All types of wastes containing radioactive component.
Food wastes from all departments of healthcare facilities, except for infectious diseases (including dermatovenerology) and phthisiatric institutions.	Patient's excreta.	Wastes from laboratories working with microorganisms of 1-П pathogenicity groups.	Wastes from drugs and diagnostics.	
Furniture, appliances, unserviceable diagnostic equipment not containing toxic elements.	Pathological anatomical wastes	Wastes from phthisiatric hospitals.	Expired disinfectants not to be used.	
Noninfected paper, sweepings, construction wastes, etc.	Organic operating wastes (organs, tissues, etc.).	Wastes from patients with anaerobic infection	Cytostatics and other chemotherapy drugs.	
	All wastes from infectious disease departments (including food).		Mercury-containing items, devices and equipment.	
	Wastes from microbiological laboratories working with microorganisms of Ш-1¥ pathogenicity groups)*.			
	Biological wastes from vivariums			

Collection, neutralization, storage and removal of medical wastes from the healthcare facilities are performed in accordance with the Waste Management Program approved by a head of the healthcare facility, which provides for:

1) composition of generated wastes by class;

2) medical waste collection procedure;

3) applied methods of decontamination (neutralization) and removal of wastes;

4) waste management scheme;

5) hygienic training of personnel on epidemic safety rules for waste management.

To organize the system of medical waste management, the head of the healthcare facility shall appoint by the order:

- 1) a person responsible for organizing waste management and monitoring compliance, who receives periodic training on waste management at advanced training courses;

- 2) persons responsible for waste management in each structural subdivision, who are instructed on how to handle medical wastes.

Accounting and control over the movement of medical wastes

Annex 5 to the Sanitary and Epidemiological Requirements for Health Facilities SR

Logbook of daily accounting of medical wastes in the structural unit in accordance with the waste class.

	Class A* (m3)		Class C			
			Biological/anatomical wastes (kg)			
Day	Occurred	Transferred to other organizations for disinfection (disposal)	Occurred	Disinfection (disposal) of medical facility		Transferred to other organizations for disinfection (disposal)
				Burning	Non-fire methods	

Class C							
Sharp, shaven wastes (kg)				Other (kg)			
Occurred	Disinfection (disposal) of medical facility		Transferred to other organizations for disinfection (disposal)	Occurred	Disinfection (disposal) of medical facility		Transferred to other organizations for disinfection (disposal)
	Burning	Non-fire methods			Burning	Non-fire methods	

Class C										
Biological/anatomical wastes (kg)				Sharp, shaven wastes (kg)			Other (kg)			
	Medical facility was closed		Transferred to other organizations for disinfection (disposal)		Medical facility is damaged	Transferred to other organizations for disinfection (disposal)		Medical facility is damaged		Transferred to other organizations for disinfection (disposal)
Occurred	Burning	Non-fire methods		Occurred	Non-fire methods Burning		Occurred	Burning	Non-fire methods	

Class D									
Mercury-containing substances (pcs.)		Liquid (l), solid (kg) drugs				Other (kg)			Class E (kg)
Occurred	Transferred to other organizations for disinfection (disposal)	Occurred	Medical facility was excluded		Transferred to other organizations for disinfection (disposal)	Occurred	Transferred to other organizations for disinfection (disposal)	Occurred	Transferred to other organizations for disinfection (disposal)
			Burning	Non-fire methods					

General Scheme of Medical Waste Movement

Stages:

1) collection and neutralization of medical wastes at the place of their formation;

2) medical waste temporary storage;

3) transportation;

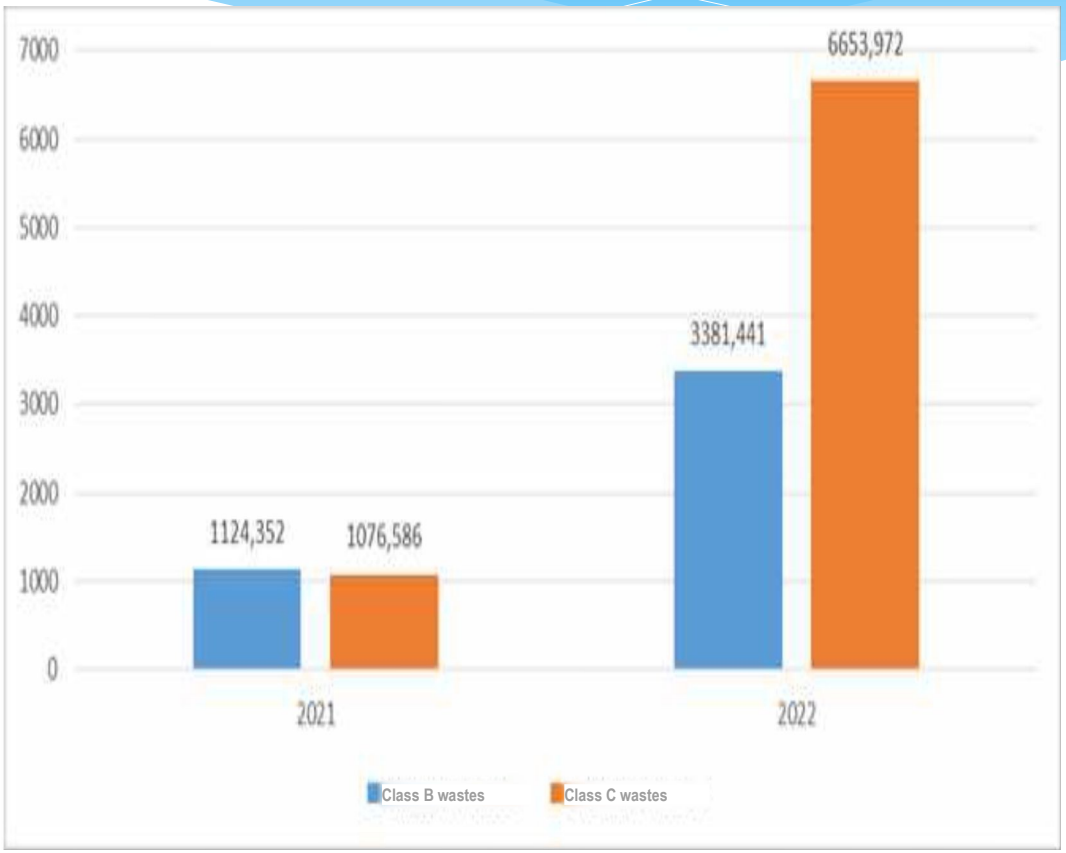
4) medical waste destruction/disposal.

List of Documents

* Production control program for compliance with hygienic and anti-epidemic measures in terms of medical waste management;
* Orders on the appointment of responsible specialists for medical waste management, certificates;
* Waste movement scheme;
* Hazardous waste certificates;
* Payment for negative environmental impact;
* Waste removal contracts;
* Certificates (reports) confirming the fact of waste placement / use / neutralization / transportation;
* Information about introductory and periodic briefings on the rules of safe waste management;
* Emergency logbook;
* Waste accounting logbook in organization and units.

Volume of Medical Wastes (B, C) under Results of the 1 half year 2022

According to the WHO, about 85% of the total wastes generated by healthcare facilities are ordinary non-hazardous wastes. The remaining 15% are considered hazardous materials, which can be infectious, toxic or radioactive.



Medical Waste Disposal

Region	MW quantity	Number of special plants
Akmola	988	15
Aktyubinsk	889	17
Almaty	1793	18
Atyrau	689	16
East Kazakhstan	1598	22
Zhambyl	1104	11
West Kazakhstan	924	6
Karaganda	1419	10
Kostanai	1003	4
Kyzylorda	790	8
Mangistau	390	6
Pavlodar	981	11
North Kazakhstan	940	7
Turkestan	1752	4
Nur-Sultan City	1025	7
Almaty City	1649	13
Shymkent City	585	6
Republic of Kazakhstan	**17524**	**181**

1) Sanitary and Epidemiological Requirements for Health Facilities SR approved by Order of the Ministry of Health of the Republic of Kazakhstan dated 11.08.2020. No. ҚР-ДСМ-96. (Chapter 7. Sanitary and Epidemiological Requirements for Waste Collection, Neutralization and Storage at Health Facilities) Annex 5

Order of the Minister of Health of the Republic of Kazakhstan No. ҚР ДСМ-219/2020 dated November 30, 2020 On Approval; of the Rules for Providing Information on Medical Wastes.

Daily accounting of generated medical waste in the logbook according to the form, Annex 1.

2) Sanitary and Epidemiological Requirements for Production and Consumption Waste Collection, Use, Application, Neutralization, Transportation, Storage and Disposal SR approved by Order of the Ministry of Health of the Republic of Kazakhstan dated 25.12.2020 No. ҚР-ДСМ-331. (Paragraph 2. Sanitary and Epidemiological Requirements for Medical Waste Collection, Transportation, Storage, Neutralization and Use)

-74. Medical wastes of B and C classes are neutralized at special neutralization plants: two-chamber furnaces (incinerators) with an operating temperature of at least +1000 - +1200°C with waste gas afterburning chambers, having gas purification or neutralized by alternative methods:

ST RK 3498-2019 Hazardous Medical Waste. Requirements for Separate Collection, Storage, Reception, Transportation and Disposal (Neutralization).

Current Issues

1. Capacity and number of available plants of existing organizations does not allow for the disposal of the entire volume of medical wastes.
2. The issue of centralized collection, transportation and disposal of medical wastes has not been solved in district centers and rural areas in all regions.
3. Lack of space for temporary storage facilities in privately owned medical organizations, outpatient clinics and medical offices.
4. Lack of enterprises that dispose of mercury-containing medical wastes (equipment) in the regions.
5. The main method of disposal is burning.
6. High cost of MW disposal services.
7. Discrepancies in the existing regulations in the current regulatory acts.

* • There is an insufficient number of specialists who can assess the benefits of this or that waste destruction equipment, evaluate the available technologies, and disseminate information about the effectiveness of various waste processing methods.

* • Insufficient research, articles, reviews, monographs, and manuals in this field.

* • Lack of an established scheme of laboratory and instrumental control of local waste decontamination plants (content of harmful chemicals in the air of the working area, bacteriological control using biotests).

* • Insufficient work on the professional analytical assessment of the installed devices for the MW destruction, taking into account the volume of accumulated wastes by class and morphological structure.

* • Lack of design solutions for the placement of plants, premises for decontamination of wastes, their equipping for each type of medical organization.

Solutions

It is necessary to determine the prospect of introducing alternative methods of MW destruction in the Republic (autoclaving, which involves sterilization of wastes by pressurized water steam, microwave treatment, etc.);

stimulate introduction of advanced environmentally safe and hygienically reliable technologies; (Almaty city - modular sterilizers (plasma) for decontamination of medical wastes together with restructurizer/shredder in a container version (rapidly erected modular complex for the City Perinatal Center, the City Emergency Care Hospital, the City Clinical Infectious Diseases Hospital named after Izatima Zhakenova Public State Enterprise on the Right of Economic Management of Bostandyk district, the City Clinical Hospital No. 7 Public State Enterprise on the Right of Economic Management, the Maternity Hospital No. 2, the City Clinical Infectious Diseases Hospital named after Izatima Zhekenova Public State Enterprise on the Right of Economic Management of Turksib district, the Phthisiopulmonology Center Public State Enterprise on the Right of Economic Management of Turksib district, the City Clinical Hospital No. 4 Public State Enterprise on the Right of Economic Management, the Central City Clinical Hospital Public State Enterprise on the Right of Economic Management).

It is advisable to build plants for processing healthcare wastes with the introduction of new environmentally friendly and cost-effective technologies in large cities and regional centers;

Organization of professional training for medical and engineering personnel in MW management.

* Incinerators can range from extremely sophisticated high-temperature models to the simplest units operating at much lower temperatures. All types of incinerators, when properly operated, remove microorganisms from waste and turn it into ash. Incinerators can be efficient and affordable. This is an image of a working incinerator. Note that no objects are outside the incinerator and no wastes are accumulated. In accordance with the Stockholm Convention, use the best available technology to achieve the recommended levels of dioxin and furan emissions: 2 burning chambers (the 1st: 850 °C and the 2nd: 1100°C); auxiliary burners; sufficient time of air availability in the 2nd chamber; sufficient oxygen content and high turbulence of the exhaust gas; as well as for flue gas cleaning. In healthcare facilities with limited resources and where high-temperature incinerators are not available or not feasible, small incinerators such as De Montfort brick (double chamber) incinerators are often used. Dual-chamber incinerators provide higher temperatures, allowing for more efficient waste combustion and toxic emissions reduction. Drum (single chamber) incinerators can also be used, but are not recommended. Low-temperature incinerators are considered a better option than open burning.

Thank you for attention!