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ANALYSIS OF ENVIRONMENTAL COMPONENTS POLLUTION FROM MEDICAL WASTE DISPOSAL

Relevance of the study topic is due to the following components. Compliance with the Order of the State Emergency Service of Ukraine № 618 dated 09/20/2013 «On approval of the Regulations on the organization of environmental support of the State Emergency Service of Ukraine» [1], the Decree of the President of Ukraine № 722/2019 dated 09/30/2019 «On the Sustainable Development Goals of Ukraine for the period until 2030» [2], the Resolution of the Cabinet of Ministers of Ukraine № 476 dated 04/30/2024 «On approval of the list of priority thematic areas of scientific research and scientific and technical developments for the period until December 31 of the year following the termination or abolition of martial law in Ukraine» [3], the Specialty Passport of 21.06.01 «Ecological Safety», approved by Resolution of the Presidium of the Higher Attestation Commission of Ukraine № 33-07/7 dated 04.07.2001 [4], the Law of Ukraine № 3769-IX dated 04.06.2024 «On Amendments to Some Laws of Ukraine Regarding the Mandatory Use of Liquid Biofuels (Biocomponents) in the Transport Sector» [5], the Standard of Higher Education in Specialty 183 «Environmental Protection Technologies» of the Third (Educational and Scientific) Level in the Field of Knowledge 18 «Production and Technologies»,

approved by Order of the Ministry of Education and Science of Ukraine № 1427 dated 23.12.2021 [6], the Topics of Scientific Research and Scientific and Technical (Experimental) Developments for 2025-2029, approved by Order of the Ministry of Internal Affairs of Ukraine № 326 dated 21.05.2024 [7], the Civil Protection Code of Ukraine in its current version dated 12.09.2025, Article 108 [8]. **Purpose of the study.** To examine the environmental impact of medical waste disposal practices. **Object of the study.** Detrimental anthropogenic effects of medical waste treatment on environmental compartments. **Subject of the study.** The metrics and parameters that define the object of the study.

Results of the study. The study commenced with an analysis of prevalent global medical waste disposal methodologies, including incineration, autoclaving, chemical disinfection, and the latest environmentally sustainable technologies. This global review highlighted the effectiveness of integrated management systems, alongside dedicated separate collection and advanced processing techniques, in ensuring proper medical waste disposal. In contrast, the research identified several critical systemic weaknesses in Ukraine's medical waste sector, notably an inadequate legislative framework, a severe lack of proper infrastructure, and chronic underfunding. The analysis paid particular attention to Category B waste (epidemiologically hazardous), detailing rational and effective treatment modalities. Furthermore, the paper outlined the potential environmental and social consequences of improper handling, ranging from soil and water contamination to significant risks of infectious disease spread. To demonstrate practical application, the study developed an effective waste management scheme for a specific medical institution, identifying both system strengths and priority areas for improvement. A crucial component was a comparative scheme of centralized versus decentralized utilization, which clearly delineated the advantages, disadvantages, and operational feasibility of each model based on the facility's scale and local infrastructure. Finally, the research defined key prospects for system development, focusing on the implementation of automated accounting, advanced disinfection technologies, regulatory improvements, and mandatory ecological awareness training for staff.

Conclusions. Consequently, this research examined the qualitative and quantitative parameters that define the environmental pollution stemming from medical waste disposal activities.

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