



## Scientific report on the Master of Science degree obtained by Mohammad Yahya Muhammad Talhi

On Wednesday, February 14, 2024, a public discussion was held at the Faculty of Petroleum and Natural Resources of the master's thesis submitted to the Department of Environmental Sciences by the student/ Muhammad Yahya Muhammad Talhi, entitled “**An Environmental Study of Medical Waste from Government Hospitals in the City of Hodeidah, Yemen**”.

The student highlighted the results included in his study, and highlighted the problems and damage caused by the absence of rational management of medical and hazardous waste, as well as the lack of awareness among those dealing with it. The discussion concluded with a number of recommendations, the most important of which is the necessity of following integrated management procedures for medical and hazardous waste and treating them properly in order to ensure human health and safety in addition to sound environment.

### Study summary

In this study, the current status of medical waste management in the city of Hodeidah was presented in terms of its definition, components, sources, and dangers that may result from improper handling of it. This study aimed to study the potential environmental and health impacts of existing medical waste management in government hospitals in the city of Hodeidah, Hodeidah Governorate, Republic of Yemen. In addition to studying the methods and approaches used in medical waste management in developed countries to work on applying them at the local level. The research also aims to identify legislation and laws related to the management of medical waste, and to find the optimal method for integrated environmental management of how to dispose of it.

Information was collected through focus group discussions, personal interviews, questionnaires for cleaners and medical staff, in addition to field observations. These methods have been used to focus on several factors, including social, economic, environmental, health and public safety factors. Medical waste was also weighed and measured, and microbial analyzes of the waste containers were performed.

The results showed that the total amount of medical waste produced by all government health facilities studied was 1641.2 kg per day. The study also showed that the sorting process between hazardous medical waste and non-hazardous medical waste takes place only in large government health facilities (Al-Thawra Hospital Authority, 21<sup>st</sup> September Hospital, and the National Center for Central Public Health Laboratories). As for the rest of facilities, the sorting process takes place in two parts, as it is limited only to sharp tools. The study also showed that the current temporary medical

waste collection site does not comply with World Health Organization specifications in all hospitals, as corridors, bathrooms, or sterilization rooms are used.

Through field visits and observations during the study, it was found that occupational safety is significantly low among cleaning workers, which causes and exposes workers in these health institutions to danger and harm. The study also showed that there are no laws and regulations related to the management of medical waste and how to deal with it well within these institutions. There is also no preliminary treatment for hazardous waste before its final disposal in the health facility complex, except for the National Center for Central Public Health Laboratories. The burning process is carried out using brick ovens, which is the method used to dispose of hazardous waste in some hospitals. These furnaces do not contain filters to purify smoke emissions, and they have low operational efficiency.

Another result of this study is that there are no designated landfills for medical waste, but rather it is disposed of in the city's public landfills and mixed with municipal and other waste. Medical waste contains many biological pollutants, which are the main cause of the risk of disease infection and environmental poisoning.

The study recommended the importance of working on issuing laws and executive regulations related to medical waste management. It also recommended the importance of implementing a system of separating and sorting between types of medical waste in the correct ways. As well as raising the level of cooperation between the various institutions concerned with medical waste management in order to solve existing problems and develop the system, and create a central incinerator that conforms to environmental specifications so that it serves all hospitals located outside the city.



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