Introducing a design concept for a hazardous medical waste incinerator, in light of environmental requirements

Diaa Hamdy Farouk Serag El-Din
Assistant Lecturer, Faculty of Applied Arts, Badr University in Cairo (BUC), diaa.hamdy@buc.edu.eg

Sayed Abdou Ahmed
Professor, Faculty of Applied Arts, Helwan University, dr.sayed1965@yahoo.com

Mohamed El-Sayed El-Sayed
Lecturer, Faculty of Applied Arts, Helwan University, dr.muhamad.zidan67@gmail.com

Abstract:
This paper studies the dangers of medical waste especially in eras of pandemics such as Covid-19 period. In addition, this paper also attempts to introduce a new design concept for medical waste incinerator that improve efficiency of dealing with those hazardous infectious wastes with the aim of offering safer ways of handling and reducing infection. Problem Statement: Despite the advantages offered by the thermal treatment method (burning and incineration) in the process of handling and disposal of hazardous medical waste, the process of transporting those wastes to the site of the incinerator for thermal treatment, as well as transporting the ashes resulting from incineration to the sanitary landfill (safe landfill) leads to an increase in the time of interaction between the waste and the personnel in charge of getting rid of this waste materials, which exposes workers in the medical waste disposal chain to the risk of infection. Research Aims: The research aims to merge two stages of the chain of handling hazardous medical waste (the stage of external transport of waste and the stage of burning and thermal waste treatment) into one stage, which reduces the handling of waste and thus reduces the chances of infection transmission among the members of the handling chain. Importance of research: The research is interested in studying one of the most important stages of the chain of management and dealing with medical waste, which is the final treatment stage (one of the most known treatments methods is heat treatment), and it is also concerned with the need to take into account the application of environmental requirements necessary to achieve safety for both humans and the environment, by reducing the chances of the spread of infection, reducing its risk and decreasing harmful emissions that affect the environment. Research methodology: based on the analytical descriptive method. Results: Identify challenges and health, environmental problems caused by dealing with medical waste reach some solutions to those problems. - Provide a design concept of waste incinerator that help reduce handling with infectious waste and decrease the environmental impact of treatment methods.

Keywords: Industrial Design, Product Design, Hazardous Medical Waste, Waste Treatment, Environment, Waste Incinerator

References:

Paper History:
Paper received 15th March 2022, Accepted 25th May 2022, Published 1st of July 2022