

**DESIGN, DEVELOPMENT AND PERFORMANCE EVALUATION OF AN
INCINERATOR MODEL FOR DISPOSABLE SANITARY WASTES**

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Sanitary waste disposal has been created a social and environmental crisis in Sri Lanka since the unavailability of proper waste management methods. This study aimed to develop and evaluate an incinerator model for managing diapers and sanitary pads disposed by hostels, hospitals, and hotels effectively. The incinerator model consists of a burning chamber, chimney, residual collector, and mainframe. The burning chamber comprised of two fuel chambers and a single waste burning chamber of 10 kg capacity, which is located in between fuel chambers. The outer wall of the burning chamber was perforated to provide unlimited oxygen flow while waste is burning. Chimney at the top of the burning chamber helps to exhaust smoke and cone-shaped base facilitated to locate inlet for fuel and sanitary waste. The residual collector at the bottom of the chamber collects ash, while the frame helps to connect and provide stability for all parts of the incinerator. Crushed dry coconut shells were used as fuel, and the fuel to waste ratio was 7:10. Actual waste burning capacity, theoretical waste burning capacity, and waste burning efficiency were 40 kgh⁻¹, 30 kgh⁻¹, and 75%, respectively, while the actual burning capacity of open burning was 17 kgh⁻¹. The maximum average temperature inside the incinerator was 575 °C at ambient weather conditions of temperature 32 °C, 56% of RH, and 05 kmh⁻¹ wind velocity. Moreover, waste volume reduction was 92% at the end of the burning process. The results concluded that the incinerator can be used to manage sanitary waste disposed effectively.

Keywords: Burning chamber, Diapers, Incinerator, Sanitary pads