



## ABSTRACT

Solid waste disposal is a major threat to the global environment, especially in the urban area of developing countries. Traditionally, open dumping and burning were common practices, followed to dispose solid waste in Sri Lanka. In the urban areas of Sri Lanka, this issue was acute, due to the population density, high volume of waste generation and lack of land for proper disposal. This will directly affect the land, water and air; causing multifarious environmental and human health risks. However, such environmental and health issues cannot be wiped-off completely, but its volume and risk levels could be minimised and managed at an acceptable point.

Considering the above facts, this study was designed with the prime objective of identification and comparison of issues, caused by the urban solid waste disposal methods, according to the geographical variations of urban areas in Sri Lanka. The prominent urban areas have been incorporated for this study, since they have crucial solid waste related issues, base on their geographical features.

Four sample study areas were selected, considering their salient geographical characteristics. Accordingly, Colombo and Kandy municipalities from wet agro-ecological zone and Kurunegala and Badulla municipalities from intermediate agro-ecological zone were selected. To simplify the field study and to maintain uniformity, each dumpsite of the above municipality areas has been further stratified into three rings (0-500 m, 500-1000 m and 1000-1500 m), based on the distance from the dumping site. Totally, 867 sample households were selected, using stratified random sampling technique. Structured and semi structured questionnaires were also used to collect primary data from the target groups.

Collected data were analysed, using the ANOVA and other suitable analytical tools. Quantitative information in terms of socio-environmental and health issues extracted. According to the selected methodology, issues have been compared between the two study areas in each Agro-ecological zone. The nature of issues also were analysed by selecting variables; such as distance, direction and location from each study areas.

The results revealed that the total health related issues of all four study areas; Colombo site represented 45.6%, Kandy-21.4%, Badulla-17.6% and Kurunegala-15.4%. The study identified 23 types of common diseases in all selected sample areas, but its volume and the risk level varied; based on its geographical and socio-economic factors in each study area.

Further, this study found that 56.7% of female population have been victimized with different types of health issues, than the males (43.3%); since they spent more time around the dumpsites as housewives and waste pickers. Similarly, 65.5% of children 75% of waste pickers and 70% of waste collectors/vehicle drivers have also been affected by multiple health problems, due to the direct contact with waste dumpsites. The high prevalence of health issues in all four study areas have been recorded in the first ring (0-500m- 53.8%), displaying a decreasing trend from its first to last ring from the dump site (1000-1500m-14.1%). Therefore, p-value between the distance and diseases also shows a significant result (3.1251E-11). Similarly, p-value among the diseases also displayed a significant value (3.4226E-16).

However, the direction and location wise health issues show a complex situation, according to its wind direction, wind speed, hydrology, topography, vegetation cover, distribution of settlement pattern and topographical features of each site. Furthermore, socio-economic background of households, such as income, education level, social crimes and period of occupancy, positively influence their health conditions. Subsequently, all these socio-environmental issues generate primary and secondary adverse impacts (physically and psychologically) for the future generation. This study proved that the nature, effects and size/volume of human health issues varied, due to the uneven physical and human geographical factors.

Considering the above results, this study attempts to identify possible options to minimise waste generation and find solutions to solid waste related issues in the context of geographical perspectives. This study also analysed the socio-environmental condition and site selection process of selected study areas. Accordingly, productive recommendations and suggestions have been provided, with the aim of improving the environment and human health status to support economic productivity of the people and to ensure public safety.

This study recommends central point (National Environmental Forum) for managing, monitoring and controlling process of all environmental related activities. The study strongly believes institutional corporations, delegation of authorities, micro/macro level approaches, stakeholders' participation, sufficient financial requirements for efficient solid waste management. Further strengthening of existing institutional, legal and policies/plans with regard to solid waste management, proper site selection process and waste minimization at the sources were recommended by this study. This can be more effective through an integrated solid waste management system, consolidating all related factors of waste management hierarchy into a center point. Further, this study formulated a Model for optimum waste management strategy for urban Sri Lanka.