

**EFFECTIVE SEPTIC MANAGEMENT FOR
CONDOMINIUMS AND APARTMENTS IN SRI LANKA**

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Degree of Master of Science

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University of Moratuwa

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Thesis submitted in partial fulfilment of the requirements for the degree Master of
Science in Building Services Engineering

Department of Mechanical Engineering

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Sri Lanka

January 2022

DECLARATION

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ABSTRACT

Sri Lanka is a developing country, where wastewater and septic disposal are not managed at its optimum level. 76% percent of the households equip with their own water sealed latrines for sanitation facilities and discharged septic mixture is collected to a septic tank. Periodical septic removal from the household storages are required at a cost. Limited space availability in urban dwellings, apartments and condominiums caused practical issues to the current practice of the septate removal. Management of variated amounts of septate is a challenging function because the capacities of the offsite treatment plants are inadequate in highly populated urban areas, effectiveness of the treatment facilities is not consistent due to lack of technical knowledge and improper maintenance. Poor handling of human waste is caused by contamination of faecal sludge in water reservoirs, disposal of human excreta and urine without converting them into usable or commercialized end products and huge burden to municipalities to handle septic in terms of economical and practical. Currently effective human waste management becomes a national level discussion. It is planned to conduct national level survey and review the techniques and technological status locally, regionally and globally and make recommendations for practical technology transfer. Other than that enhance the quality of the composting can be obtained from the human excreta to a fertilizer through nutrient addition and facilitate the adoption of new composting technologies to enhance the yield and quality and implement household and institutional level conversion of septic into compost are key concerns.

As per the world health organization prevention of spreading of water borne diseases such as typhoid or cholera is difficult due to the faecal contamination of drinking water sources. More than two million of child deaths annually occur due to the pneumonia and diarrhoea globally. Most of the children living in poor or remote communities are facing this risk and to the facts that preventable diseases are not mitigated by effective interventions which are not provided equally to all communities.

Managing human septic from domestic and commercial sources and urban run-off is largely a matter of proper treatment and disposal. In Sri Lanka 97% of the community is relying on water sealed latrines and septic tanks for sanitation while about 3% use sewerage connection. Large part of the country does not have treatment plants to disposal of faecal sludge safely. Further treatment processes to sanitized night soil is required before disposal or delivering as a fertilizer. Local authorities are simply collecting the content in the septic tanks and dump it into the available treatment plants where poor end product management. Current situation with septic disposal is grown adversely with the increasing the number of multi-storey buildings in the urban areas due to 90% of urban dwellers equip with onsite sanitation systems with water sealed latrines directed to the septic collection tanks or cesspits.

This thesis conducted to find out ancient and latest techniques and technologies of septic management applicable to current practice in the Sri Lankan context. Data were collected from three distinct multi-storey buildings located within the Colombo municipal council and analysed the discharged volumes of the septic and way of disposal. Possibility of adaptation or implementation of ancient and latest technologies are discussed extensively based on the results on the results of the analysis.

Properly treated faecal sludge with organic fractions of municipal solid waste has higher possibility to be used as an agricultural resource for farmers in the country. Currently use of faecal sludge as fertilizers and possibility of replacing the mineral fertilizers are not popular in Sri Lanka. Sustainable and appealing solutions are required to dispose human waste with the increasing population country. Research works and experiments in the relevant areas are required to extend and develop further to ensure the sustainable management of faecal sludge.

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TABLE OF CONTENTS

1. INTRODUCTION.....	1
1.1 BACKGROUND.....	1
1.2 HUMAN WASTE MANAGEMENT PROBLEMS OF SRI LANKA.....	2
1.3 AIM.....	2
1.4 OBJECTIVES.....	3
1.5 METHODOLOGY.....	3
2. LITERATURE REVIEW.....	5
2.1 WORLDWIDE ANCIENT SEPTAGE MANAGEMENT SYSTEMS.....	5
2.1.1 Ancient Systems in Sri Lanka.....	5
2.1.2 Ancient Septic Management Systems in Other Countries.....	9
2.2 RECENT SEPTIC MANAGEMENT TECHNOLOGIES.....	18
2.2.1 Six Different Harmless Lavatory Systems.....	18
2.2.2 Faecal Sludge Management in Japan.....	22
2.2.3 Forward Osmosis Toilet Systems with Resource Orientation.....	24
2.2.4 Composting Toilets.....	29
2.2.5 Electrochemical Disinfection of Toilet Wastewater.....	35
2.2.6 Black Water Treatment Using Solar Septic Tank.....	36
2.2.7 Indigenous Urine Water Purification Method in Sri Lanka.....	38
2.2.8 Producing Biogas.....	39
2.2.9 Composting or Fertilizing of Human Waste.....	43
2.3 PRESENT STATUS OF SEPTAGE MANAGEMENT.....	43
2.4 WATER USAGE IN TOILETS.....	47
2.5 IDENTIFIED RESEARCH GAPS.....	48
3. DATA COLLECTION.....	49
3.1 DESIGN FOR DATA COLLECTION.....	49
3.2 SELECTION OF SITES FOR DATA COLLECTION.....	56
3.2.1 Apartment Residencies – Colombo 08 (Location 1 (Case 1)).....	56
3.3 HIGH RISE APARTMENT COMPLEX – COLOMBO 03 (LOCATION 2 (CASE 2))...	57
3.4 GOVERNMENT OFFICE BUILDING AT NARAHENPITA (LOCATION 3 (CASE 3)) .	58

3.4.1 Practical Issues of the Existing Septic and Kitchen Water Treatment Plant 63

4. DATA ANALYSIS AND RESULTS	64
4.1 ANALYSIS OF APARTMENT RESIDENCIES – COLOMBO 08 (LOCATION 1 (CASE 1))	64
4.1.1 Septic Collection During the Occupancy of the Building – Location 1.	68
4.2 ANALYSIS OF HIGH-RISE APARTMENT COMPLEX – COLOMBO 03.....	73
4.2.1 Septic Collection During the Construction Period – Location 2.....	73
4.2.2 Septic Collection During the Occupancy of the Building – Location 2.	77
4.3 ANALYSIS OF GOVERNMENT OFFICE BUILDING AT NARAHENPITA – LOCATION 3 (CASE 3).....	83
5. DISCUSSION	84
6. CONCLUSION.....	99
6.1 KEY FINDINGS AND RECOMMENDATIONS	100
6.1.1 Issues with the existing system	100
6.1.2 Proposed Mechanisms of Septage Treatment	101
6.1.3 Agro - Economic Potential of the Excreta and Urine.....	102
6.1.4 Recommendations	102
6.2 LIMITATIONS AND FUTURE DIRECTIONS	104
7. REFERENCES.....	105
8. APPENDIX 1	117

Table of Figures

Figure 1: Ancient Lavatory Slab from Anuradhapura [14].....	6
Figure 2: Remaining of Urinals and Lavatories at Colombo Museum [14].....	8
Figure 3: Pipes from Baked Clay [15]	10
Figure 4: Underground sewer system - Interior b) Canals build through the walls of buildings constructed to discharge wastewater [15]	10
Figure 5: Parallel Canalization of Multi-Story Building [15]	11
Figure 6: Clay Backed Pipes [15]	12
Figure 7: Squat Type Toilet and Seat Type Toilet [15]	13
Figure 8: Cesspits Used for Disposal of Wastewater [15]	13
Figure 9: Remains of Minoan Engineering [15]	14
Figure 10: Flush Type Toilet Arrangement in Palace of Minos Knossos [15]	15
Figure 11: Public, Open, and Household Toilet in Indus Valley [15]	16
Figure 12: Pigsty Toilet Model [15].....	17
Figure 13: (a.) Squat Type Toilet (b.) Open Air Toilet [15]	17
Figure 14: (c) Toilet Complex at Akila Castle [15]	18
Figure 15: Three Septic Tank Type [25].....	19
Figure 16: Double Vault Funnel Type [25].....	20
Figure 17: Double Pit Alternative Type [25]	20
Figure 18: Biogas Linked Toilet [25].....	21
Figure 19: Urine and Feces Division Toilet [25]	21
Figure 20: Integrated Flushing Toilet [25].....	22

Figure 21: Scenario A Type Toilet [40]	26
Figure 22: Scenario B1 and B2 Type Toilets [33]	27
Figure 23: Scenario C1, C2, C3 & C4 Type Toilets [33].....	28
Figure 24: Composting Toilet System [11].....	30
Figure 25: Design Approach of the Composting Toilets [11].....	31
Figure 26: Self Contained Composting Toilet [11].....	31
Figure 27: Central Composting Toilets [11]	32
Figure 28: Carousel Composting Tank (a) and Multi Chambered Bio Drum (b) [11]	33
Figure 29: Vacuum Based Composting Systems [11]	34
Figure 30: Urine Separating Toilet (Water Based) [57].....	34
Figure 31: Solar Powered Mobile Toilet with Wastewater Electrolysis Cell [60].....	35
Figure 32: Integrated UTST and MSL System [63].....	37
Figure 33: Biogas Plant	41
Figure 34: Modern Bio Toilet [65] [66]	42
Figure 4: Installed Modern Bio Toilet [66].....	42
Figure 34: Issue Network of Partially Onsite Sanitation Systems [67].....	47
Figure 35: Flow Diagram of the Wastewater Treatment Plant	60
Figure 36: Septic Mixture Content During The Construction - Location 1	68
Figure 37: Pie Chart Illustration of Septic Mixture Content during the Building in Use – Location 1	72
Figure 38: Septic Mixture Content during the Construction – Location 2.....	77

Figure 39: Septic Mixture Content During the Occupancy – Location 2	83
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LIST OF TABLES

Table 1: Human Feces and Urine Contamination	25
Table 2: Processes Needed for Various Toilet Systems.....	28
Table 3: Biogas Production from Different Sources	41
Table 4: Influent Quality	59
Table 5: Treated Water Quality.....	59
Table 6: Summary of Data Collected During the Construction Phase in Location 1 (Case 1)	64
Table 7: Septic Mixture Content During the Construction of Site – Location 1	67
Table 8: Summary of Data Collected During Occupancy in Location 1	69
Table 9: Septic Mixture Content during the Building in Use - Location 1	70
Table 10: Discharged Black Water and Grey Water Volumes in - Location 1.....	71
Table 11: Summary of Data Collected During the Construction Phase in Location 2 (Case 2)	73
Table 12: Septic Mixture Content During the Construction of Site – Location 2	75
Table 13: Summary of Data Collected During the Building Occupancy in Location 2	78
Table 14: Discharge Volume of Excreta Per Day in Location 2.....	79
Table 15: Discharge Volumes of Urine Per Day in Location 2	80
Table 16: Discharge Volumes of Used Water by Apartment Residents in Location 2	80
Table 17: Discharge Volumes of Used Water by Other Occupants in Location 2	81

Table 18: Septic Mixture Content During the Use of the Building in Location 2	81
Table 19: Discharged Volumes of Black Water and Grey Water During the Use of the Building in Location 2.....	82
Table 20: Composition of Excreta and Urine Discharged in Case 1& 2	86
Table 21: Potential Quantitie of N, P & K	87
Table 22: Organic Fertilizer Requirement of Crops.....	87
Table 23: Potential Crop Production with Use of Converted Urine and Fecal Sludge Discharged in Case 1 and Case 2	88
Table 24: Volumes of Water, Urine and Excreta from Apartment Residencies 1	90
Table 25: Volumes of Water, Urine and Excreta from Apartment Residencies 2	90
Table 26: Potential Biogas Production in Case Studies	92
Table 27: Aspects of Seven Different Resource Oriented Lavatory Systems.....	93
Table 28: Comparison of Existing Septic Management Techniques with ROS	95