

Session II

**ENVIRONMENTAL, TRANSPORTATION & HYDRAULICS**

# Current Practices of Hazardous Waste Management in Central Province and Development of Proposal for Effective Management

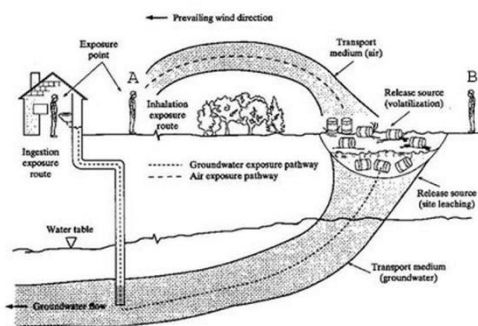
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## Abstract

*The nature is being polluted severely with hazardous substances day by day because of the modernization of the civilization in the world. The resultant of this carelessness causes irreversible illnesses such as cancer, lung diseases, kidney failure, skin problems and etc. Therefore establishment of hazardous waste management system is important to eliminate the hazardous substances from the environment. In this research, Central province of Sri Lanka was taken in to account to do questionnaire survey and data collection on household hazardous wastes and healthcare wastes for the analysis of current practices of hazardous waste management. Stratified random sampling method was used to estimate the amount of hazardous wastes generated in the target area. According to the analysis, averagely, 5,500 Tons of household hazardous wastes produced in the central province per year and 50 Kg of healthcare wastes (Sharp, Infectious and Liquid Chemical Wastes) produced per day in an average hospital in central province. Most of these hazardous wastes are being managed in a haphazard manner due to many reasons, especially, lack of knowledge, lack of awareness and economic condition of the country.*

## 1. Introduction<sup>1</sup>

This document is intended to provide the necessary information on hazardous wastes specially generated in households and healthcare institutions in the central province of Sri Lanka.



**Figure 1: Illustration of Hazardous agents' exposure pathway.**

The Hazardous substances which consists of toxic agents will be

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transported from the improperly disposed Hazardous waste sources to the point of contact with human, animal and environment by the prevailing winds and substances in contact with soil may leach into ground water and eventually be transported to local drinking water sources.

When a person who is always exposed to these hazardous substances can undergo severe health problems frequently and ends up with fatal disorders or cancer and perhaps death.

### 1.1 Literature Review

There are three ways that a solid waste can be considered “hazardous” under Environmental Protection Agency (EPA) regulations.

1. The waste is specially listed in EPA regulations.
2. The waste is declared hazardous by the generator based on its knowledge of the waste.
3. The waste is tested and meets one of four characteristics established by the EPA:  
Ignitable, Corrosive, Reactive, Toxic

According to the type of wastes produced from various places, the classifications are:

1. Household hazardous wastes

e.g.: CFL bulbs, Toilet cleaners, Cosmetic items, Pesticides and etc.

2. Healthcare wastes

e.g.: Pharmaceutical wastes, Infectious wastes, Sharp wastes, Pathological and Anatomy wastes, Liquid and Chemical wastes and etc.

3. Industrial and commercial wastes

e.g.: Paint, Thinner, Oil, Acidic and base wastes, Agricultural wastes and etc.

4. Electronic wastes

e.g.: Batteries and all other electronic components



Figure 2: Hazard Symbols

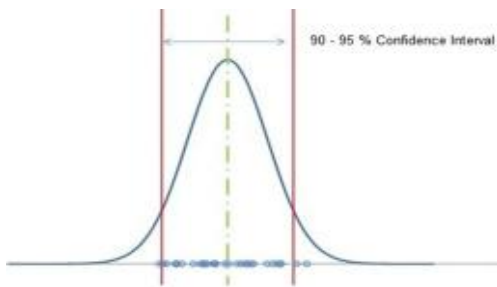
## 2. Methodology

Questionnaire survey was carried out in the households and hospitals to assess the hazardous wastes from generation to disposal.

A well formatted questionnaire was created and issued among each respondent whoever has the educational background and oral questions asked and filled in the

questionnaire for others. Also, wastes were measured in the sample wards in the hospitals using measuring balance in order to find out the waste amount generated in a day.

All these data were fed in to computer excel sheet and Stratified random sampling equations were applied to analyse the data to estimate the results with a confident interval for whole central province.



**Figure 3: Distribution Curve**

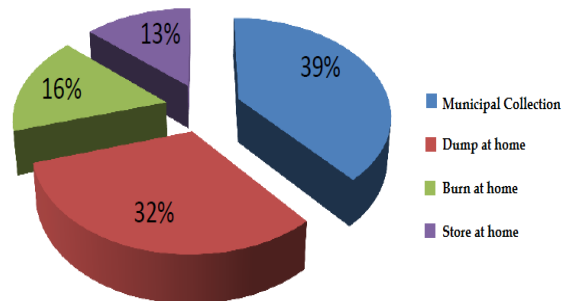
### 3. Results and Discussion

#### 3.1 Household hazardous wastes

**Table 1: Household hazardous waste amounts in central province**

Hazardous waste type	Amount (Tons/Year)
E-wastes	4202
Chemical, corrosive & Toxic	653
Ignitable	646
<b>Total</b>	<b>5500</b>

These hazardous wastes were disposed or handled in the following methods:



**Figure 4: Current Disposal Practices**

Also, assessment was carried out to find the following further aspects of the current practices and issues related with hazardous wastes among the inhabitants in the central province:

- Problems due to hazardous wastes
- Knowledge on hazardous waste
- Source of knowledge

#### 3.2 Healthcare wastes

Assessment was carried out in the following places in the central province:

1. Matale District General Hospital
2. Kandy Genral Hospital
3. Nawalapitiya General Hospital
4. Private clinic centres in Kandy

Following details were obtained from the assessment in the above hospitals and clinic centres:

1. Amount of healthcare wastes produced in each hospital per day.

2. Current waste management systems for separate waste types.
3. Knowledge level on hazardous wastes among the labourers or waste handlers.

According to the analysis, more than 75% of the hazardous wastes were handled in a haphazard way without a proper management system.

But in the Matale hospital, there is a self-management system with proper quality to handle the healthcare wastes and biodegradable wastes. Also, in Kandy General teaching hospital and Nawalapitiya General Hospital having better waste management system where Kandy General Hospital sends its infectious, pathological wastes to a waste treating agent with a cost of Rs. 45 per Kilo gram.

### 3.3 Recommendations

- ✚ It is important to make awareness on Hazardous wastes among the public by Posters, Seminars, Handbills, Workshops and etc.
- ✚ Establish a proper hazardous waste management system in every local government
- ✚ Teach the ways to handle the hazardous wastes to the students and public in schools and institutions.
- ✚ Make T.V. and Newspaper advertisements regarding the hazardous wastes and their affects

### References

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