

APPENDIX 6G

A SUMMARISED TRANSLATION

MINISTRY OF HEALTH  
GUIDELINES ON  
SOLID WASTE  
MANAGEMENT  
IN RURAL AREAS

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## Appendix 6G

This Guideline was developed by MOH Engineering Division to provide guidance to ground personnel on proper solid waste disposal systems that are to be adopted or implemented in rural areas. This activity forms part of MOH Rural Environmental and Sanitation Programme (RESP), which was started in 1974. The other activities carried out are the provision of community water supply, sanitary latrines and sullage disposal.

### 1. Introduction

This topic explains briefly the importance of having proper waste management and disposal system and the effects on health, environment and economy. The status of Waste Management System in Malaysia is also highlighted, particularly in rural areas. It is mentioned that the responsibility of SWM in rural areas does not belong to any specific agency. However, MOH has taken the initiative in providing technical advice and guidelines so as to ensure the health and well being of the rural population.

### 2. Role of Ministry of Health

- 2.1 To ensure the people live in a healthy environment.
- 2.2 To implement RESP activities and to achieve the target set.
- 2.3 To carry out the mandate set in 7th Malaysia Plan where financial assistance has been allocated for SW activities in rural areas. Previously, no financial allocation was given for this activity.

### 3. Objectives of the Guideline

- 3.1 To strengthen the implementation of SWM in rural areas so as to prevent the spread of any water and air borne disease.
- 3.2 To provide assistance to MOH personnel in carrying out SWM activities.
- 3.3 As a source of reference in solving SWM problems in rural areas.
- 3.4 To create awareness among rural population on the relationship between healthcare and disease prevention.

### 4. Criteria Used in Preparing the Guideline

- 4.1 Minimum Technical Standards
- 4.2 Lowest Cost and Appropriate Technology
- 4.3 Incorporate Local Practice
- 4.4 Applicability  
The Guideline is only applicable in implementing RESP where health education and community participation components are taken into consideration. Other agencies are also allowed to adopt this Guideline and any technological improvement is recommended.
- 4.5 Limitation  
This Guideline is not applicable when there exists SWM collection and disposal services provided by Local Authority.

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### 5. Guidelines

5.1 This topic provides the scenario for houses in Rural Villages. Rural villages can be classified as:

- 5.1.1 Traditional Villages
- 5.1.2 Coastal/Riverine Villages (Houses on Stilts)
- 5.1.3 Modern Village and Agriculture Settlements
- 5.1.4 Permanent Orang Asli Settlements

5.2 Flow of Solid Waste

Typical flow of solid waste is generation, storage, collection, transportation, treatment and disposal.

- 5.2.1 Stored and disposed in the nearby area or house compound by member of the house.
- 5.2.2 Waste is collected and transported using vehicle to a disposal area which may be far away from his house/village.
- 5.2.3 Waste generated is immediately taken out and disposed at the nearby disposal area without any storage.
- 5.2.4 Waste generated is immediately transported by vehicles to a distant central disposal site or to a community storage bin where collection and final disposal are carried out by other external party.

A fraction of the waste might have been removed from the waste stream for recycling or reuse.

5.3 Waste Generation in Rural Areas

Factors that affect the waste generation in rural areas are income level, occupation, hygienic practices, availability of leisure hours and surrounding vegetation.

5.3.1 Waste Composition and Characteristics

a. Waste Composition

From a number of studies that have been carried out, the waste from rural areas consists of the following materials:

1. Organic	-	35%
2. Plastic	-	27%
3. Paper	-	19%
4. Glass	-	7%
5. Metal	-	6%
6. Textile	-	1%

b. Waste Density

The waste density for rural areas is found to be 200kg/cu.m

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The study also shows that there are quite significant quantities of the garden waste, which includes leaves, tree branches etc but the quantity depends on the member of the house in cleaning up the compound.

### 5.3.2 Generation Rates

The study that has been carried out in several villages indicate that the generation rate for rural areas is between 0.4 – 0.6 kg/cap/day.

### 5.3.3 Reuse/Recycling

The studies indicate that less recycling activities occurred in rural areas as compared to urban areas. This is due to the fact that the waste items will be reused before entering the waste stream. In addition, the market for recyclates in rural areas is much lower. It is also noticed that the use of materials that are recyclable is lower in rural areas.

Although recycling activities in rural areas are not as active as in urban areas, the Guideline recommended recycling to be carried out. Talks on Health education and Public Awareness on the health and environment, which include the advantages of recycling, are being regularly carried out by MOH personnel. Procedures and methods of recycling are also being taught, especially in the making of organic compost.

## 5.4 Storage

The Guideline also explains the types of storage suitable for rural houses, which is locally available, long lasting, durable and must be covered. Minimum size is 30 litres. The storage capacity recommended is for 2 days. The Guideline recommends that the bins should be placed outside the house and not accessible by rodents or other animals. Where community-recycling programmes exist, separate containers for recyclates must be provided and the location recommended is at community halls, near shop houses or recreation area.

Central or Communal storage is recommended when there exists:

- a. High House Density;
- b. Houses without or with small compounds where in-situ disposal cannot be undertaken; and
- c. Areas that have no access to collection trucks.

## 5.5 Collection and Transportation

This section of the Guideline provides the types of collections that are to be used which include pushcarts, compactors and self-transport. This activity is only applicable where communal storage or shared disposal facility exists in the locality.

**Appendix 6G****5.5.1 Frequencies**

The recommended waste collection frequencies are once in 2 days for general waste and less frequent for inorganic waste that can be recycled.

**5.6 Intermediate Treatment**

Selection of treatment system must be based on economic viability, practicality and operational sustainability

**5.6.1 Open burning**

Burning of waste in the open area is the most commonly method used in rural areas to treat and dispose of waste. This practice will reduce 70% to 90% of the waste volume depending on the waste composition and the moisture contents. The Guideline allows open burning to be practiced in areas of low population density where houses are sparsely located and the soil is porous with high ground water table. However, wastes that contain hazardous and explosive material must not be burnt. The waste should also be reasonably dry to ensure complete burning. Since open burning is illegal, prior approval from DOE is necessary to avoid any legal action taken against them.

**5.6.2 Compost**

The definition of compost, the procedure in making good compost and the various techniques of composting are clearly explained in the Guideline.

**5.6.3 Reuse and Recycle**

The definitions, reasons and advantages of recycling are elaborated in the Guideline. The Guideline also contains the steps to execute recycling programme by the waste generators as well as by the community.

**5.7 Final Disposal**

5.7.1 The materials that are not allowed to burn, the partially burnt waste and the ash residues are to be finally disposed of by burying. A hole of varying sizes is dug in the ground. A table showing the sizes of the holes required to be made for a life span of either 6 months or 12 months is given in the Guideline.

5.7.2 The Guideline also highlights that the selection of the burying area should be carefully considered to avoid ground water contamination. The burying area should also be located in areas where impermeable soils exist. The hole should be covered immediately when the wastes are dumped to avoid smell and breeding ground for disease-carrying vectors. The cover can be opened and closed easily.

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- 5.7.3 For houses that are situated near to a municipal landfill that is equipped with environmental protection facilities, the disposal of waste at the site is encouraged. However, prior arrangement must be made with the landfill operators to ensure the operating conditions are fulfilled.

**6. Implementation Mechanism****6.1. Roles of Health Agencies at various levels****6.1.1 Engineering Services Division, MOH**

1. Responsible for the successful implementation of RESP in rural areas, which includes solid waste management activities.
2. To properly plan solid waste facilities so that the implementation will result in a healthy living environment in the rural areas.
3. To make policies, guidelines and sub-programme for SW activities in rural areas.
4. To develop technical and financial norms so that the implementation is carried out efficiently.
5. To provide sufficient financial allocation from Federal Government for the purpose of executing specific components of SWM activities

**6.1.2 State Health Department**

1. To provide details of implementation activities that are carried out at the District office based on the policy and the guidelines issued.
2. To provide additional input and technical requirements based on local condition and needs.
3. To distribute the financial allocation for RESP activities accordingly.
4. To provide technical input in ensuring the success of RESP.
5. To plan, supervise the implementation and provide surveillance for the use of facilities that have been provided to the community.

**6.1.3 District Health Office**

1. To identify the activities and solid waste projects that are to be implemented.
2. To purchase necessary materials.
3. To execute and supervise the implementation of the solid waste project.
4. Evaluate and monitor the performance and effectiveness of the project.
5. To carry out health education activities in relation to solid waste to the inhabitants of rural areas.

**Appendix 6G****6.2 Implementation Approach**

Unlike other RESP activities, there is no specific approach as far as implementation solid waste project is concerned. The following steps have to be taken in ensuring the solid waste projects will be carried out smoothly.

**6.2.1 Planning**

Planning work consists of identifying suitable solid waste management services in any area that will be accepted by the community or individual houses. It includes all the elements of SWM. The commitment of the local villagers is a pre-requisite in ensuring the success of the proposed project. They should be involved in all stages of implementation. Their involvement includes the construction of the facilities, recycling activities, marketing the recyclates and identifying the most appropriate location for treatment and disposal facilities. Provision of any facilities will require financial input. Although the government is the source of financial assistance, it has to be made known that the public will also be required to make a contribution as the project will benefit them as a whole. There will be revenue obtained from selling of the recyclates and most important of all, the condition of their living environment will be improved. All financial contributions will be kept by the community and will be used to partially finance the project and for repair and maintenance works.

Appropriate technology has to be selected taking into consideration the institutional and legal requirement, financial availability, maintenance capability, and most importantly, the acceptance from the people who will be the operators of the facilities.

**6.2.2 Information and Basic Survey**

Information that is required before implementing the solid waste projects are:

- a. Health status and disease pattern;
- b. Current practice of SWM;
- c. House location and map of the village showing all the infrastructure;
- d. Waste composition and characteristics;
- e. Type of soil and underground water; and
- f. Other information such as the existence of recyclers in the vicinity.

**6.2.3 Technical Information and Health Education**

Public education sessions must be conducted to explain to the people the proposed system, their responsibilities, the recycling activities, waste characteristics, separation of hazardous waste and other aspects of waste management.

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### 6.2.4 Construction of SWM Facilities

Like any other RESP activities, the construction is to be done through “gotong-royong” concept as far as possible. The main facilities to be constructed are:

- a. Final Disposal Facilities;
- b. Communal Storage Facilities; and
- c. Other related works.

### 6.2.5 Operation and Maintenance

It is very important to ensure that the facilities to be constructed are used, operated and maintained properly. The people must therefore be informed about their responsibilities in operating and maintaining the installed system. Technical training should also be conducted if deemed necessary to a selected group of people who will be assigned to manage and operate the system.

### 6.2.6 Monitoring

Monitoring activities must be carried out to ensure that the people are using the constructed facilities effectively. Any shortcoming in the design and operation has to be immediately rectified. Routing inspection has to be carried out by Health personnel and also by the appointed members of the community to determine the functionality and effectiveness of the system.

### 6.3 Cooperation of External Agencies

Other than MOH, cooperation from other agencies is encouraged in order to participate and develop a set of uniform guidelines that are to be used and adopted in managing solid waste in rural areas.

## 7. Conclusion

Continuous development has resulted in the increase of solid waste. The development has slowly extended to the rural areas and as such the problem of waste management is also experienced in the rural areas. With the problem of insufficient disposal sites coupled with the increased awareness of a healthy living environment, the rural population is beginning to realise the importance of proper solid waste management systems.

This Guideline is therefore prepared only as a guide to any agencies and members of the public who wish to improve the efficiency of solid waste management in rural areas.