



# WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit  
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Vol. 49 No. 14

02<sup>nd</sup>– 08<sup>th</sup> Apr 2022

## Solid waste management in disaster management part II

This is the second and last in the series of articles on Solid waste Management in Disaster management.

### Waste management options

The main waste management options are waste reduction, waste reuse, repair and recycling. In situations where these options are difficult to utilize or when there is waste remained to be managed even after these options are used, there are other methods of waste management to be considered such as burial and incineration.

Waste reduction is reducing the generation of waste. Initially, the sources of waste generation are identified and behaviours of the population which lead to waste generation are assessed. Based on the information gathered, ways in which waste generation can be minimized are formulated. Then the behaviour of the people is influenced to reduce waste generation through improving awareness. In waste reusing, waste which otherwise is thrown away is used for different tasks and purposes. For example, plastic containers can be used for storage and plastic sheets can be used for roofing. Recycling and composting are parts of an overall waste management system. However, it is more suitable and feasible to be used in the latter part of the disaster management process rather than in the initial stage. First, the waste should be segregated into three categories inorganic, organic and non-recyclable. Organic waste can be

composted. For non-recyclable waste, other options like a land filling, incineration and burial can be considered. Recycling and composting will provide more opportunities for the affected population to get involved in the process and it will also be psychologically beneficial to deal with the traumatizing situation.

### Waste hierarchy

The waste hierarchy is a hierarchy of the above-mentioned methods. However, in a disaster situation, it is difficult to proceed along the hierarchy as there can be immediate risks posed by solid waste, where quick removal of them is a priority. Therefore, an effective solid waste management system should utilize all the above methods appropriately and timely

### Waste reduction and minimization

#### Waste reuse/ repair

#### Recycling/ composting

#### Landfill/ burial/ incineration

### Waste management at the household level

The two main steps in waste management at the household level are collection, containment and storage followed by disposal. For collection, containment and storage, family bins can be used. However, in the initial stage, they will have to be provided to each family because an intensive collection and transportation system is needed and the number of bins required is likely to be numerous at this stage. Thereafter, in the

### Contents

- |  | Page |
|--|------|
| 1. Solid waste management in disaster management part II   | 1    |
| 2. Summary of selected notifiable diseases reported (26 <sup>th</sup> – 01 <sup>st</sup> Apr 2022 )  | 3    |
| 3. Surveillance of vaccine preventable diseases & AFP (26 <sup>th</sup> – 01 <sup>st</sup> Apr 2022) | 4    |

WEEKLY EPIDEMIOLOGICAL REPORT SRI LANKA 2022

latter part of disaster management, they can be encouraged to use their garbage bins like simple plastic buckets with handles and lids, sacks which can be securely tied, plastic bags which can be secured etc.

People should be advised to separate hazardous waste before storage. Appropriate facilities have to be provided to dispose of them immediately. It is also important to make them aware that the bins have to be adequately covered and storage time has to be as short as possible. Otherwise, waste can get decomposed especially in tropical, humid conditions which can increase insect breeding and smells. After collection, containment and storage of waste, the previously mentioned waste management options can be applied. However, the remaining waste has to be disposed of at the communal level or household level.

Burial and incineration are two options to dispose of waste at the household level. A household pit should be located more than 10 meters away from the dwelling and more than 15 meters away from the water sources. The base of the pit should approximately be 1.5 meters above the water table and the ideal depth of the pit should be 1– 1.5 meters. It is important to regularly cover the pit with soil or ash. Ideally, a fence around the pit will help to avoid accidents and scavenging.

When the pit is filled up to the surface, the waste inside should be compacted and covered with soil. Problems associated with this method are the emission of hazardous gases like Methane from organic material, and a possible increase in the rodent population if the pit is not adequately covered and smelling. Burning or incineration should only be used as the last option. This could ideally be undertaken in a pit, covered with soil. The site of incineration should be a considerable distance away from dwellings. However, incineration can be associated with risks like fire, emission of gases particularly CO<sub>2</sub> and uncomfortable smoke.

### Waste management at the communal level

Waste management at the communal level is comprised of collection and containment, waste transfer and waste disposal. For collection and containment, adequate collection points should be provided within an appropriate distance from households. However, they should ideally be at least 15 meters away from dwellings. The collection points should be capacitated enough to collect waste from several households. In the initial stage, one 100-litre container will be adequate for 10 families. The storage containers should be resilient enough so that they cannot be easily turned over. They should ideally be non-inflammable. The main problem associated with these containers is the quick overflowing of waste. To minimize this, waste

can be reused in possible situations. Otherwise, compacting and shredding non-reusable material are options.

In some situations where waste cannot be disposed of at the same site of collection, waste needs to be transferred to a different location. Ideally, large amounts of waste should be emptied daily and small amounts should be emptied twice weekly. Animal carts, hand carts, ordinary trucks and specialized waste collection trucks are some of the methods which can be used to transfer waste.

Burial and incineration are the options to dispose of waste at the communal level, where recycling and reusing are not applicable. For the burial of waste, communal pits are used. They should be located more than 30 meters away from dwellings as well as 30 meters away from water sources. The main determinant of the pit size is the population size. Usually pit size is calculated by, Volume of the pit= volume of waste produced per person per day x population x number of days until camp closure or 6m<sup>3</sup> is adequate for 50 people. When determining the depth of the pit, the pit base should be at least 5 meters above ground water level at the end of the rainy season. The sides of the pit should be stable and at 45 degrees. The main problem associated with these pits is leachate from the pit, contaminating groundwater. To prevent this, the pit can be lined with clay as clay is impermeable for leachate. It is also important to cover the pit with clay. Once the pit is filled, it should be compacted and covered with soil.

No medical waste should be buried in these pits. Incineration should be considered when, all plastic products are removed, incineration takes place downwind of dwellings and the local area is not suitable for burial. Barrel type or garden type incinerators are better than open incineration as former methods reach higher temperatures thus improving efficacy. Incineration is also recommended for medical and hazardous waste.

### Sources

1. Domestic and Refugee Camp Waste Management Collection and Disposal available at file:///C:/Users/Admin/Downloads/tbn15- domestic-refugee-camp-waste-management-collection-disposal- 210508-en.pdf

**Compiled by Dr S.A.I.K. Sudasinghe of the Epidemiology Unit**

**Table 1: Selected notifiable diseases reported by Medical Officers of Health 26<sup>th</sup> - 01<sup>st</sup> Apr 2022 (13<sup>th</sup> Week)**

RDHS	Dengue Fever		Dysentery		Encephaliti		Enteric Fever		Food Poi-		Leptospirosis		Typhus		Viral Hep-		Human		Chickenpox		Meningitis		Leishmania-		WRCD		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	T*	C**	
Colombo	10	2246	0	2	0	1	0	0	0	3	1	26	0	0	0	0	1	0	0	1	9	1	3	0	1	5	100
Gampaha	45	1867	2	4	0	0	0	0	6	6	4	27	0	0	2	2	0	1	0	7	1	3	0	3	4	72	
Kalutara	38	732	0	4	0	0	1	0	5	9	86	0	1	0	1	0	1	0	0	18	0	9	0	0	2	100	
Kandy	15	521	0	3	0	0	0	0	3	2	23	1	8	0	4	0	0	0	2	10	0	1	0	1	3	96	
Matale	3	125	0	0	0	0	0	0	0	0	14	0	2	0	1	0	0	0	5	0	1	0	6	125	100		
NuwareEliya	2	52	1	7	0	0	0	0	0	0	16	0	6	0	0	0	0	0	0	8	0	0	0	0	8	100	
Galle	29	680	1	1	0	0	0	0	0	6	112	2	6	1	1	0	0	0	4	21	0	9	0	0	3	100	
Hambantota	9	211	0	22	0	0	0	0	0	0	47	2	13	0	1	0	0	0	0	12	0	3	15	139	10	100	
Matara	16	243	0	4	0	0	0	0	0	0	43	0	4	0	1	0	0	0	5	0	3	2	81	14	100		
Jaftna	80	954	0	8	1	2	1	35	2	10	15	19	306	0	2	0	1	1	5	42	0	3	0	0	47	88	
Kilinochchi	4	46	0	4	0	0	0	0	9	0	1	0	6	0	0	0	0	0	0	2	0	0	0	1	31	100	
Mannar	1	141	0	1	0	0	0	0	0	0	1	9	0	2	0	1	0	0	0	0	0	13	0	0	21	82	
Vavuniya	2	41	0	0	0	1	0	0	0	0	3	5	1	1	0	0	0	0	2	5	0	0	0	0	2	83	
Mullaitivu	0	22	0	0	0	0	0	2	0	0	9	0	3	0	0	0	0	0	0	3	0	0	0	1	23	100	
Batticaloa	35	326	6	31	0	5	0	0	1	5	13	0	0	1	1	0	0	0	5	2	15	0	1	26	100		
Ampara	2	44	1	6	0	1	0	0	0	0	28	0	1	0	1	0	0	0	2	20	1	6	0	7	7	100	
Trincomalee	36	355	9	20	0	0	0	1	0	0	5	0	1	0	4	0	0	0	1	2	0	2	0	0	20	92	
Kurunegala	22	989	0	5	0	1	0	0	1	1	27	0	10	0	0	0	0	0	4	22	0	9	15	144	4	100	
Puttalam	26	794	0	0	0	0	0	0	0	0	7	0	2	0	0	0	0	0	3	0	10	0	2	12	12	92	
Anuradhapur	5	130	0	7	0	0	0	1	0	2	65	1	14	0	2	0	1	1	1	13	2	11	13	159	4	88	
Polonnaruwa	1	40	1	3	0	0	0	0	0	1	37	0	0	0	0	0	0	0	2	2	1	2	18	116	5	88	
Badulla	13	357	0	4	0	0	0	0	0	3	63	0	10	3	28	0	0	0	5	17	0	5	1	7	4	100	
Monaragala	2	88	0	2	0	0	0	3	0	2	97	1	8	4	17	0	0	0	1	17	2	11	5	41	4	100	
Ratnapura	44	588	0	12	0	5	0	1	0	15	8	196	1	7	2	8	0	0	2	21	0	6	5	73	5	95	
Kegalle	18	367	1	3	1	1	0	1	0	4	5	117	1	6	0	2	0	0	3	25	3	15	0	7	3	100	
Kalmune	23	199	0	16	0	0	0	0	0	3	3	0	1	0	0	0	0	0	0	10	1	8	0	0	22	100	
<b>SRI LANKA</b>	<b>57</b>	<b>12158</b>	<b>22</b>	<b>169</b>	<b>2</b>	<b>17</b>	<b>1</b>	<b>45</b>	<b>10</b>	<b>72</b>	<b>65</b>	<b>1091</b>	<b>29</b>	<b>418</b>	<b>13</b>	<b>78</b>	<b>0</b>	<b>4</b>	<b>33</b>	<b>304</b>	<b>14</b>	<b>148</b>	<b>80</b>	<b>909</b>	<b>10</b>	<b>95</b>	

Source: Weekly Returns of Communicable Diseases (esurveillance.epid.gov.lk). T=Timeliness refers to returns received on or before 01<sup>st</sup> Apr., 2022 Total number of reporting units 361 Number of reporting units data provided for the current week: 342 C\*\*=Completeness

**Table 2: Vaccine-Preventable Diseases & AFP**

**26<sup>th</sup> – 01<sup>st</sup> Apr 2022 (13<sup>th</sup> Week)**

Disease	No. of Cases by Province									Number of cases during current week in 2022	Number of cases during same week in 2021	Total number of cases to date in 2022	Total number of cases to date in 2021	Difference between the number of cases to date in 2022 & 2021
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	01	01	00	00	00	00	02	00	22	15	46.6 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	00	00	00	00	01	00	00	00	01	02	00	12	28	- 57.1 %
Measles	00	00	00	00	00	00	00	00	00	00	00	10	05	100 %
Rubella	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Tetanus	00	00	00	00	00	00	00	00	00	00	01	01	01	0 %
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	00	01	00	0 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Tuberculosis	00	95	17	08	05	18	37	00	22	202	163	2171	1753	23.8 %

**Key to Table 1 & 2**

**Provinces:** W: Western, C: Central, S: Southern, N: North, E: East, NC: North Central, NW: North Western, U: Uva, Sab: Sabaragamuwa.  
**RDHS Divisions:** CB: Colombo, GM: Gampaha, KL: Kalutara, KD: Kandy, ML: Matale, NE: Nuwara Eliya, GL: Galle, HB: Hambantota, MT: Matara, JF: Jaffna, KN: Killinochchi, MN: Mannar, VA: Vavuniya, MU: Mullaitivu, BT: Batticaloa, AM: Ampara, TR: Trincomalee, KM: Kalmunai, KR: Kurunegala, PU: Puttalam, AP: Anuradhapura, PO: Polonnaruwa, BD: Badulla, MO: Moneragala, RP: Ratnapura, KG: Kegalle.  
**Data Sources:** Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS, Special Surveillance: AFP\* (Acute Flaccid Paralysis), Japanese Encephalitis  
**CRS\*\*** =Congenital Rubella Syndrome  
**NA** = Not Available

**Covid-19 Prevention & Control**

**For everyone's health & safety, maintain physical distance, often wash hands, wear a face mask and stay home.**

Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to [chepid@slt.net.lk](mailto:chepid@slt.net.lk). **Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

**ON STATE SERVICE**

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