



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
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Solid Waste Management in Disaster Management (Part I)

This is the first in a series of articles on Solid waste Management in Disaster Management.

Solid waste management in emergencies

Solid waste management is an important part of disaster management due to several reasons. Disasters lead to increased collection of solid waste because normal ways of solid waste disposal is disrupted and the disaster itself generates a lot of solid waste.

What is solid waste ?

Solid waste refers to all non liquid waste generated by human activity and various solid waste material resulting from the disaster. This may include, general domestic garbage like food waste and ash; improperly disposed human faeces, waste derived from emergency supplies such as plastic water bottles and packaging; rubble resulting from the disaster; mud and slurry deposited in case of natural disasters and specialist waste such as medical waste from hospitals and toxic waste from industry.

There are several factors that determine the quantity and composition of waste produced by settlements and refugee camps.

This includes, the types of staple foods consumed by the affected community, type of economic activity and local practices of waste disposal. Apart from this lack of clarity as to who is responsible for waste disposal is a main reason why collection of waste is more in disasters.

Importance of solid waste management in a disaster

Proper waste management is of critical importance in disaster management. Poor waste management leads to unnecessary collections of solid waste which pose various health risks. On the other hand, improper methods of waste disposal also cause adverse health outcomes.

Flies, which are disease transporting vectors, breed within waste. Water can get stagnated within waste and provide mosquito breeding sites. Apart from that, rodent population gets increased around waste as they get attracted to waste for food and shelter and they breed around waste. This poses a health risk as rats are reservoir species for diseases like Leptospirosis. Waste water produced by and associated with solid waste can get drained into drinking water sources and contaminate them. Not only that, solid waste itself can block and contaminate these water sources. Heaps of waste also carry the risk of sudden fires. Waste also includes other hazardous items such as needles, broken glasses and explosive material which have the potential to inflict injuries and trauma.

On the other hand, there is a possibility that refugee camp dwellers starting to dispose waste by themselves, using methods like improper burning and burial. Low temperature burning of plastics lead to gas emissions which is hazardous to health. Uncontrolled dumping of waste can lead to spread of dust as well as fungi. This can cause breathing difficulties.

WEEKLY SRI LANKA 2016

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Objectives of Management of solid waste

According to the Sphere standards, people should be able to live in an environment which is not contaminated by solid waste and they should have means to dispose their domestic waste conveniently and effectively. Therefore, proper solid waste management aims at minimizing health risks to the inhabitants of the refugee camps, visitors and surrounding communities.

The Sphere standards

The Sphere has set standards for solid waste management in disasters as well. The key indicators suggested by the sphere include,

- People from the affected population are involved in the designing and implementation of solid waste management.
- Household waste is put in containers daily for regular collection, burnt or buried in a specified refuse pit.
- All households have access to refuse container and/or are no more than 100 meters from a communal refuse pit
- At least one 100 litre container is available per 10 families where domestic refuse is not buried on site
- Refuse is removed from settlement before it becomes a nuisance or a health risk

Assessment of the problem

As an initial step to start solid waste management, several questions have to be answered. Types of waste being generated by the community and volume thereof have to be assessed. Volume and type of waste produced by the disaster itself have to be clarified. Along with this, the location of the waste produced by the disaster has to be determined. It is also important to assess whether there are any immediate health risks posed by them. Apart from that it is essential to see whether there are any hazardous waste, as it is important to dispose them immediately and securely.

Next important step is to determine whether there is any responsible person or authority already appointed to handle solid waste. Existing disposal methods should also be identified and adequacy thereof have to be assessed. This will help to identify areas which need modification. During the assessment it is also important to see what new methods are adopted after the disaster to dispose solid waste.

This assessment will help to identify whether there is any immediate risk associated with solid waste and to determine the

speed and intensity of the required interventions to dispose waste.

Sources

1. Solid waste management in emergencies, available at http://www.who.int/water_sanitation_health/publications/2011/tn7_waste_mangt_en.pdf?ua=1
2. 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 : Water Quality Surveillance
Number of microbiological water samples May 2016**

District	MOH areas	No: Expected *	No: Received
Colombo	15	90	0
Gampaha	15	90	NR
Kalutara	12	72	NR
Kalutara NIHS	2	12	NR
Kandy	23	138	NR
Matale	13	78	NR
Nuwara Eliya	13	78	20
Galle	20	120	60
Matara	17	102	10
Hambantota	12	72	NR
Jaffna	12	72	188
Kilinochchi	4	24	18
Manner	5	30	NR
Vavuniya	4	24	38
Mullatvu	5	30	45
Batticaloa	14	84	25
Ampara	7	42	38
Trincomalee	11	66	NR
Kurunegala	29	174	105
Puttalam	13	78	NR
Anuradhapura	19	114	62
Polonnaruwa	7	42	17
Badulla	16	96	95
Moneragala	11	66	110
Rathnapura	18	108	43
Kegalle	11	66	NR
Kalmunai	13	78	NR

* No of samples expected (6 / MOH area / Month)
NR = Return not received *According to the returns received by 27.7.2016

Table 1: Selected notifiable diseases reported by Medical Officers of Health 11th - 17th June 2016 (25th Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmaniasis		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	84	6160	0	59	0	1	1	28	0	19	2	89	0	3	0	15	0	0	0	0	198	0	22	0	0	6	25
Gampaha	0	1983	0	33	0	5	0	12	0	5	0	124	0	7	0	16	0	0	0	0	184	0	20	0	3	0	0
Kalutara	0	1252	0	38	0	3	0	16	0	16	0	245	0	4	0	12	0	0	0	0	111	0	35	0	0	0	14
Kandy	92	1147	5	97	0	12	1	11	0	26	3	75	2	58	0	37	0	0	0	7	100	1	27	0	6	87	100
Matale	10	215	1	24	0	1	0	10	0	2	3	55	0	12	0	13	0	1	0	0	22	0	45	0	15	77	92
NuwaraEliya	6	153	0	52	0	1	2	29	0	15	1	27	0	44	1	23	0	0	0	4	79	0	26	0	0	85	100
Galle	15	846	4	49	0	8	0	2	0	2	2	159	2	48	0	6	0	0	0	4	167	1	26	0	2	70	95
Hambantota	25	354	2	26	0	1	0	2	0	50	2	75	0	35	1	18	0	0	0	3	138	1	11	0	149	83	100
Matara	19	424	1	56	0	6	0	5	1	35	4	104	1	26	1	17	0	0	0	2	102	1	11	1	120	94	100
Jaffna	25	1292	8	119	0	3	1	49	0	36	0	8	3	529	0	8	0	0	0	0	104	2	30	0	1	100	100
Kilinochchi	0	50	0	24	0	0	0	25	0	4	0	11	0	17	0	0	0	0	0	1	8	0	7	0	0	75	75
Mannar	0	90	1	11	0	4	0	14	0	4	0	8	0	37	0	0	0	0	0	7	0	1	0	0	0	80	100
Vavuniya	1	150	1	7	1	3	2	36	0	27	0	11	0	8	0	6	0	0	0	2	21	0	7	0	3	100	100
Mullaitivu	5	107	1	13	0	0	2	15	1	36	0	22	0	5	0	0	0	0	0	1	10	0	5	0	4	80	80
Batticaloa	5	306	9	149	0	0	2	19	1	88	0	29	0	4	0	9	0	0	0	0	62	0	5	0	1	71	100
Ampara	1	100	1	17	0	0	0	0	0	18	0	23	0	0	0	6	0	0	0	0	69	0	1	0	5	29	71
Trincomalee	10	277	1	31	1	1	1	10	1	24	2	21	1	18	0	31	0	1	1	104	1	8	0	3	75	92	92
Kurunegala	51	1018	12	134	0	7	0	1	0	6	3	91	4	15	0	16	0	2	6	171	0	31	0	50	76	90	90
Puttalam	4	581	0	27	0	2	0	4	0	0	3	33	0	57	0	0	0	0	0	43	0	25	1	2	38	85	85
Anuradhapura	3	289	0	35	0	1	0	3	0	21	5	184	0	20	0	11	0	0	0	136	0	20	4	113	37	79	79
Polonnaruwa	2	207	0	15	0	2	0	9	0	10	1	72	0	1	0	2	0	0	2	70	0	11	0	78	100	100	
Badulla	16	314	4	65	0	10	0	5	0	19	1	83	1	51	0	77	0	0	3	102	1	104	0	2	65	88	88
Monaragala	0	171	0	33	0	1	0	2	0	10	0	139	0	72	1	99	0	2	2	38	0	17	3	24	64	82	82
Rainapura	43	1195	4	199	0	18	1	18	0	20	6	303	0	19	1	80	0	0	0	106	2	79	0	1	44	83	83
Kegalle	15	692	4	43	0	12	0	18	0	42	3	119	1	16	1	15	0	0	1	179	1	28	0	0	64	91	91
Kalmune	4	358	2	42	0	3	0	4	0	39	0	11	0	0	0	2	0	4	0	52	0	13	0	0	85	100	100
SRILANKA	436	19731	61	1398	2	105	13	347	4	574	41	2121	15	1106	6	519	0	10	39	2383	11	615	9	582	63	82	82

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 17th June, 2016. Total number of reporting units: 339. Number of reporting units data provided for the current week: 281. C**=Completeness
A = Cases reported during the current week. B = Cumulative cases for the year.

Table 2: Vaccine-Preventable Diseases & AFP

11th - 17th June 2016 (25th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2016	Number of cases during same week in 2015	Total number of cases to date in 2016	Total number of cases to date in 2015	Difference between the number of cases to date in 2016 & 2015
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	00	00	00	00	00	01	01	05	28	38	-26.3%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Mumps	00	01	00	02	02	00	00	00	00	05	07	207	197	+5.0%
Measles	00	00	00	00	01	00	00	00	00	01	39	277	1222	-77.3%
Rubella	00	00	00	00	00	00	00	00	00	00	00	06	06	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	00	04	09	-55.5%
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	00	07	-100%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	30	40	-25%
Tuberculosis	28	23	07	02	00	06	00	00	22	88	208	4474	4475	-0.02%

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
 AFP and all clinically confirmed Vaccine Preventable Diseases except Tuberculosis and Mumps should be investigated by the MOH

Influenza Surveillance in Sentinel Hospitals - ILI & SARI								
Month	Human					Animal		
	No Received	ILI	SARI	Infl A	Infl B	Pooled samples	Serum Samples	Positives
May	3540	40	10	0	6	1001	556	0

Source: Medical Research Institute & Veterinary Research Institute

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ON STATE SERVICE

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