WEEKLY EPIDEMIOLOGICAL REPORT

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Solid Waste - Its impact on health & environment

This is a brief description of the impact of solid waste on human health and environment. In the next issue, the ways solid waste can be managed will be described.

Solid wastes are the solid material which do not have any economic value and discarded from human or animal activities. They can create significant health problems and a very unpleasant living environment if not disposed properly. If not correctly disposed of, waste provide breeding site for insect vectors, snakes, pests and rodents. It may pollute water sources and the environment. In proper solid waste management process those only do not have any economic value should be disposed of. However, in most countries there is no proper solid waste management. Therefore, valuable resources in large quantities are disposed as unwanted or useless material. Sri Lanka is not an exception.

There are many factors that contribute to solid waste to become a problem to any society. Rapid population growth, rapid and unplanned urbanization and material development of the society, all have contributed to aggravate the problem. Over the time the consumption pattern and the life style of people has changed in a way that the generation of waste has exceeded the assimilation capacity of the environment for natural decomposition. In a proper solid wastes management, there should be a systematic collection from the places of its origin, and then they should be brought into disposal sites by means of an appropriate transport mechanism. There should be an intermediate treatment of solid wastes to minimize its hazardous effects to the environment and the living organisms including human. Then waste should be disposed of by using environmental friendly methods. Unfortunately, in Sri Lanka, from the very beginning of this process, there are inherent deficiencies. The haphazard waste disposal practices in the country have caused a number of environmental problems endangering human health and the sustainability of ecosystems. The social and economic problems associated with improper waste management are enormous. Therefore, proper management of solid wastes should receive priority attention.

Main problems related to solid waste

Air pollution: Decomposition of solid wastes can occur either by aerobic or anaerobic microorganisms. In the process, aerobic microorganisms produce odourless gases while gases produced by anaerobic organisms often have unpleasant odours, making it a nuisance to the people living around. In addition, methane gas produced during anaerobic digestion is a green house gas contributing to global warming. Methane is a highly flammable gas which can give rise to fire hazards associated with waste dumping grounds. Burning of solid waste is very harmful to humans and other living organisms. Dioxins and furans are the most hazardous chemical compounds produced by burning of solid waste at low temperature. Although these chemicals are not water soluble they are soluble in fat and can exist in the environment for longer periods. Therefore they can enter human body and get accumulated.

Water pollution: Solid waste can cause blockage

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Different categories of solid waste	
Organic waste	Waste from preparation of food, market places etc.
Combustibles	Paper, wood, dried leaves, packaging (high organic and low moisture content)
Non-combustibles	Metal, tin cans, bottles, stones etc.
Ashes/ dust	Residue from fires used for cooking
Bulky waste	Tree branches, tyres etc.
Dead animals	Carcasses of domestic animals and live-stock
Hazardous waste	Oil, battery acid, medical waste
Construction waste	Roofing, rubble, broken concrete, etc.

of drainage lines making flooding and also creating mosquito breeding places. Pollution of surface water and ground water sources can happen frequently with solid wastes. Although there are a number of solid waste disposal sites operated by local government bodies, there are only a very few such sites that have a mechanism to control ground water pollution.

Soil pollution: Solid waste can alter chemical and physical properties of soil and the change of pH or the chemical structure can affect on plant growth or on soil microorganisms. The long-term degradable materials such as polythene reduce water infiltration which can lower the ground water level.

Health problems: Decomposing organic waste in uncontrolled waste dumping attract animals, vermin and flies. Flies may play a major role in faeco-oral transmission of organisms. Rodents may increase the transmission of diseases like leptospirosis, and salmonellosis. They also attract snakes to dumping grounds.

Solid waste also provides breeding sites for mosquitoes. In addition to their disease transmission, a high density of mosquitoes is a public nuisance.

Destroying biodiversity: Improperly managed solid waste dumping sites can disrupt ecosystems of surrounding areas affecting its biodiversity. Consumption of solid waste can result in death of herbivorous animals.

Destroying the scenic beauty: Dumping of waste around living environment is unpleasant and destroys the scenic beauty.

Social and economic problems: Disposal of solid waste is very expensive. As a result, on average, most local authorities in Sri Lanka spend more than half of their annual income for this purpose. Haphazard solid waste disposal also destroys the scenic beauty of the area and makes the environment unpleasant to live. This also will negatively affect on tourist industry.

Reference:

Harvey P, Baghri S and Reed B (2002). Emergency Sanitation. Assessment and Programme Design. WEDC, Loughborough University, UK.

Malwana C (2008). Solid Waste Management in Sri Lanka. Economic Review; 34 (3&4): 34-37.

This article was prepared by Dr Sudath Samaraweera, Consultant Community Physician.

Pilisaru - An initiative for sustainable waste management in Sri Lanka

In Sri Lanka, the responsibility in waste management is borne by Local Government Authorities. Land filling and open dumping are the methods largely used by all local government authorities in Sri Lanka. Currently, most of these local authorities, especially in urban areas are facing a the problem of finding suitable locations for waste disposal. The problem is particularly high in densely-populated areas. In addition to the difficulty in finding suitable locations they also have to manage relatively a large volume of waste. Some local authorities are forced to dispose of their solid wastes at unsuitable sites such as lowlands, or riverbanks. With these practices, pollution of water resources and surrounding environment is unavoidable.

Recently, in order to provide a lasting solution to this problem, the Ministry of Environmental & Natural Resources has launched a national level programme called 'Pilisaru' with co-chairmanship with Provincial Council and Local Government Ministry. Other governmental and private institutions, non-governmental organisations and various technological specialists are participants of this programme. The Central Environment Authority serves as the implementation body of the project.

The project aims at solving the solid waste problem in the country within the next 5 years. The national policy for solid waste management which has been introduced in 2007, provides the directions to improve the solid waste management in the country. Provision of environmentally sound waste treatment and residual waste disposal facilities are among the main areas that have been addressed by this policy.

Under this project, waste management is expected to be carried out by reduction of waste generation, reusing and recycling of waste and resource recovery to the maximum possible extent and finally the disposal of residual waste in an environmentally friendly manner.

Table 1: Vaccine-preventable Diseases & AFP

01st - 07th November 2008 (45thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	01 GL=1	00	00	00	00	00	00	01	01	87	70	+24.3
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	01	00	-
Measles	01 CB=1	01 ML=1	00	00	00	00	00	00	00	02	01	102	71	+43.7%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	33	31	+06.5%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	02	44	42	+4.8%
Tuberculosis	33	40	03	13	17	36	38	19	00	199	74	7251	8538	-11.9%

Table 2: Newly Introduced Notifiable Disease

01st - 07th November 2008 (45thWeek)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	17	13	11	0	3	9	6	3	8	70	50	4785	2957	+61.8%
Meningitis	01 CB=1	02 KD=2	02 MT=2	00	01 TR=1	02 KR=2	01 AP=1	00	03 KG=3	12	22	1157	620	+86.6%
Mumps	02	33	07	09	04	03	02	03	06	69	27	2609	1906	+36.9%

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.

DPDHS 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.

Table 3: Laboratory Surveillance of Dengue Fever

01st - 07th November 2008 (45thWeek)

Samples	Number tested		Number positive *		Serotypes									
					D_1		D_2		D_3		D_4		Negative	
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH
Number for current week	00	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	138	09	23	00	00	06	08	01	08	00	00	02	00

Sources: Genetech Molecular Diagnostics & School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

* Not all positives are subjected to serotyping.

NA= Not Available.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephalitis, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

National Control Program for Tuberculosis and Chest Diseases: Tuberculosis.

Table 4: Selected notifiable diseases reported by Medical Officers of Health

01st - 07th November 2008 (45th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encepha-litis		Enteric Fever		Food Poison-ing		Leptos-pirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Re-ceived Timely*
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	11	1446	3	241	0	15	7	156	0	134	37	945	0	6	0	102	0	0	**85**
Gampaha	11	883	4	201	0	20	1	54	0	103	18	752	0	7	3	172	0	6	**71**
Kalutara	4	427	8	291	0	13	2	67	14	40	17	581	0	4	1	43	0	2	**92**
Kandy	11	275	8	291	0	8	2	60	0	99	19	460	0	92	1	123	0	2	**80**
Matale	3	145	4	200	0	4	1	51	2	16	13	708	0	2	1	28	0	0	**83**
Nuwara	1	28	0	258	0	3	0	238	0	166	3	64	4	41	0	106	0	1	**85**
Galle	2	100	3	182	0	20	0	17	0	43	8	395	0	14	0	8	0	5	**88**
Hambantota	0	87	13	113	0	6	0	8	0	12	7	103	1	91	0	16	0	1	**100**
Matara	5	309	3	198	0	14	1	36	0	15	2	442	1	219	0	14	0	1	**76**
Jaffna	0	58	1	145	0	4	1	254	0	17	0	1	1	156	0	37	0	0	**25**
Kilinochchi	0	0	0	118	0	0	0	1	0	4	0	2	0	0	0	1	0	0	**0**
Mannar	0	25	0	21	0	6	0	156	0	0	0	0	0	1	0	16	0	0	**25**
Vavuniya	0	12	4	62	0	3	0	13	0	22	0	5	0	1	0	5	0	0	**100**
Mullaitivu	0	0	0	54	0	0	0	16	0	13	0	0	0	1	0	9	0	1	**0**
Batticaloa	0	86	5	173	0	7	0	27	0	29	0	9	0	0	0	92	0	16	**55**
Ampara	0	33	2	259	0	0	0	9	0	283	0	23	0	0	0	13	0	0	**57**
Trincomalee	0	178	1	108	0	1	0	13	0	14	0	30	0	17	1	14	0	0	**50**
Kurunegala	8	327	9	222	0	15	0	52	2	26	13	623	0	30	5	79	2	8	**95**
Puttalam	1	279	2	117	0	8	0	154	0	39	2	64	0	38	0	30	0	5	**78**
Anuradhapu	0	118	11	129	0	10	0	12	3	13	0	237	0	11	0	15	0	3	**79**
Polonnaruw	0	64	1	129	0	1	1	27	0	23	3	71	0	1	0	21	0	0	**100**
Badulla	3	89	16	472	0	6	0	121	0	96	3	68	3	112	2	150	0	1	**93**
Monaragala	0	57	2	343	0	3	0	46	0	121	0	93	0	101	0	51	1	2	**73**
Ratnapura	10	272	10	373	0	32	0	51	0	80	6	211	1	79	0	54	0	0	**72**
Kegalle	6	402	5	297	0	26	4	78	0	16	11	526	3	67	4	493	0	1	**82**
Kalmunai	0	37	4	259	0	2	0	13	0	16	0	3	0	3	0	25	0	0	**62**
SRI LANKA	**76**	**5737**	**119**	**5256**	**0**	**227**	**20**	**1730**	**21**	**1440**	**162**	**6416**	**14**	**1094**	**18**	**1717**	**3**	**55**	**75**

Source: Weekly Returns of Communicable Diseases (WRCD).
***Dengue Fever / DHF** refers to Dengue Fever / Dengue Haemorrhagic Fever.
****Timely** refers to returns received on or before 15 November, 2008 Total number of reporting units =309. Number of reporting units data provided for the current week: 233

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