WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
Ministry of Health

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WEER

How safe is our drinking water?

Water is essential for the survival of mankind. Drinking ample amounts of water has been tied to general good health too. Also, water can be a specific antidote to some of the more troubling and inconvenient health problems, such as obesity and many types of cancers. Water has the potential to be one of the most useful and cost-effective medicinal substances available.

However, finding safe, ready to drink water is very difficult. All water - be it surface water, well water or rain water - has impurities. These impurities, if ingested in large enough quantities, can be dangerous to one's health. Because of this, governments around the world make it part of their business to regulate the quality of drinking water and to certify it as safe.

In order to understand drinking water contamination, it is necessary to be aware of the sources of it first. For most urban residents, relying upon municipal water systems, drinking water comes from two major sources: groundwater and surface water. Groundwater refers to any subsurface water that occurs beneath the water table in soil and other geologic forms. It is estimated that groundwater makes up 95% of all freshwater available for drinking. Surface water refers to water occurring in lakes, rivers, streams or other fresh water sources used for drinking water supplies.

Groundwater is generally stored in aqueducts, underground layers of porous rocks that are saturated with water. These aqueducts receive water as soil becomes saturated with precipitation or through stream and river runoff. As the aqueducts exceed their capacity for water storage, they will bleed water back into streams or rivers. The aqueducts maintain a natural balance of water, alternately receiving or giving water as their saturation levels oscillate. Throughout this process, water constantly moves between surface and groundwater sources, sharing contaminants.

Fresh water, under natural conditions, usually contains microorganisms. This includes bacteria, bacterial spores, parasites, parasite eggs and/or larvae, protozoan, amoebas and other microorganisms. Most of these are killed off in the digestive tract or destroyed by the immune system and are harmless. However, some can cause vomiting and diarrhoea, while others may cause more serious illnesses.

Naturally available fresh water always contains trace amounts of heavy metals that can include cadmium, chromium, cobalt, copper, iron, manganese, molybdenum, lead, mercury, plutonium, tungsten, vanadium and zinc. In addition, water contains dissolved gases such as ammonia, carbon monoxide, iodine, methane, nitrous oxide and nitrates to name a few. While municipal water is generally safe, concerns about the body's tolerance to these agents arise when we consider the overall health of the consumer.

Along with these naturally occurring chemical agents, fresh water supplies in developed areas of the Earth also contain pharmaceuticals, including over-the-counter medications and antibiotics. These are found in trace amounts and do not generally pose a threat to humans in the present. But researchers are discovering that the trace amounts can be harmful to other natural organisms, and there is concern about continued increases in the concentration of agents.

Fresh water in developed areas also contains anthropogenic synthetic agents. This includes agricultural chemicals like pesticides, herbicides and fertilizers as well as industrial agents, such as petrochemical by-products, chlorofluorocarbons (CFC), phencyclidine (PCP) and other industrial chemicals.

To date, these agents have not been found to pose a serious risk to the general public. However, environmental researchers have found that these chemicals can be very toxic to different species, and the potential for chemical cocktail-like combinations of these agents is so numerous that it is impossible to test them all.

In order to ensure that Sri Lankans are provided with safe drinking water, the Ministry of Heath is monitoring the quality of water regularly. Each Medical Officer of Health (MOH) area in the country submits 6 water samples each month,

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for analysis in 5 government laboratories located across the country. These are

- MRI/Colombo
- Vavuniya
- Anuradhapura
- NIHS/Kalutara
- Badulla

A total of 7460 water samples were tested in 2011 and 7944 water samples were tested in 2012 from these laboratories.

Chart-1-Water Sources of Households in Sri Lanka ***(Source-Census 2011)***

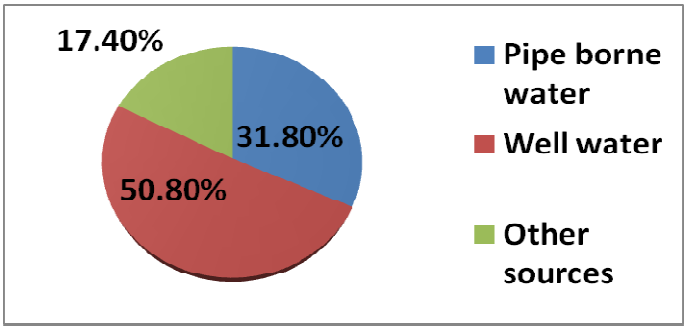

Table 1-Overall Water Quality Assessment Results

Year	Satisfactory	Unsatisfactory
2011	48%	52%
2012	47%	53%

Table-2-Water Quality Assessment-National Water Board

Year	Satisfactory	Unsatisfactory
2011	67%	33%
2012	77%	23%

Table-3-Water Quality Assessment-Other Sources

Year	Satisfactory	Unsatisfactory
2011	45%	55%
2012	47%	53%

Table-4-Water Quality Assessment of selected water sources (2012)

	Satisfactory	Unsatisfactory
Community water projects	41%	59%
Private wells	49%	51%
Others	50%	50%

More than 75% of the water samples tested were unsatisfactory in some districts.

E.g. Vavuniya, Matara, Badulla, Ratnapura in in 2011. Trincomalee, Kandy, Badulla in 2012

This article was compiled by Dr. Madhava Gunasekera of the Epidemiology Unit

Editor wishes to thank Dr. Manori Malawaraarachchi (Consultant Epidemiologist) for her contribution in preparing this article.

Table-5-Incidence of suspected food and water borne diseases of Sri Lanka [*Source: WRCD (H 399)*]

Year	Viral Hepatitis	Typhoid Fever	Dysentery	Food Poisoning
2003	2984	3116	8073	753
2004	2237	3029	10201	909
2005	2294	2376	7984	1168
2006	2765	1989	7976	973
2007	5884	1769	7197	1032
2008	1931	1995	6425	1664
2009	6868	2376	7575	1677
2010	1497	1853	5780	1103
2011	1648	1708	6847	1291
2012	2145	1403	4318	1259

Table 1: Vaccine-preventable Diseases & AFP

30th March – 05th April 2013 (14th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2013	Number of cases during same week in 2012	Total number of cases to date in 2013	Total number of cases to date in 2012	Difference between the number of cases to date in 2013 & 2012
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	01	00	00	00	00	00	00	01	01	16	24	- 34.8 %
Diphtheria	00	00	00	00	00	00	00	00	00		-		-	-
Measles	15	01	03	00	00	01	00	00	00	20	00	165	17	+ 747.0 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	06	03	+ 200.0 %
Whooping Cough	03	00	00	00	00	00	00	00	00	03	00	21	24	- 25.0 %
Tuberculosis	35	41	08	02	10	08	00	05	04	114	245	2334	2502	+ 01.6 %

Table 2: Newly Introduced Notifiable Disease

30th March – 05th April 2013 (14th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2013	Number of cases during same week in 2012	Total number of cases to date in 2013	Total number of cases to date in 2012	Difference between the number of cases to date in 2013 & 2012
	W	C	S	N	E	NW	NC	U	Sab					
Chickenpox	20	07	18	10	04	07	14	29	07	116	50	1248	1565	- 24.1 %
Meningitis	02 KL=2	00	03 GL=1 MT=2	00	01 KM=1	02 KG=2	04 AP=4	00	11 RP=1 KG=10	23	06	275	192	+ 36.6 %
Mumps	08	02	03	04	01	00	06	00	02	26	89	445	1424	- 68.2 %
Leishmaniasis	00	00	14 MT=7 HB=7	01 MU=1	00	00	16 AP=8 PO=8	00	00	31	01	347	196	+ 61.5 %

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.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

Leishmaniasis is notifiable only after the General Circular No: 02/102/2008 issued on 23 September 2008. .

Dengue Prevention and Control Health Messages

To prevent dengue, remove mosquito breeding places in and around your home, workplace or school once a week.

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

30th March – 05th April 2013 (14th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Received
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	113	2284	1	40	0	9	3	40	1	10	6	75	0	2	0	27	0	0	**69**
Gampaha	31	1051	0	29	0	7	0	13	0	6	1	92	0	6	0	72	0	0	**60**
Kalutara	26	487	5	47	0	8	2	26	0	7	8	142	0	1	0	5	0	0	**62**
Kandy	8	534	0	25	1	5	0	6	0	1	0	22	4	41	3	44	0	0	**74**
Matale	8	138	1	31	0	0	0	1	0	0	1	16	0	1	1	14	0	0	**69**
NuwaraEliya	4	74	0	22	0	2	0	2	0	2	0	8	4	26	2	3	0	0	**69**
Galle	17	215	0	28	0	7	0	1	0	4	20	78	2	17	0	4	1	1	**89**
Hambantota	7	112	1	17	0	2	0	5	0	9	5	100	4	29	1	53	0	0	**83**
Matara	4	185	0	18	0	7	2	6	0	4	13	77	1	28	1	74	0	1	**94**
Jaffna	26	277	5	58	0	3	6	150	1	7	0	0	16	225	0	6	0	0	**92**
Kilinochchi	0	17	0	10	0	0	0	5	0	1	0	5	0	8	0	0	0	0	**0**
Mannar	3	43	2	16	0	1	1	40	0	11	0	6	0	7	0	0	0	0	**60**
Vavuniya	1	31	0	19	0	9	0	4	0	4	3	23	0	1	0	0	0	0	**75**
Mullaitivu	5	37	1	3	0	1	0	3	0	1	0	9	1	3	0	0	0	0	**80**
Batticaloa	20	231	2	41	0	2	0	0	1	3	1	7	0	2	0	4	0	0	**64**
Ampara	0	47	0	33	0	0	0	1	0	0	0	5	0	0	0	1	0	0	**43**
Trincomalee	6	98	0	18	0	1	0	0	0	0	0	43	1	4	0	2	0	1	**83**
Kurunegala	32	1474	7	69	0	14	1	18	0	3	5	104	1	13	1	19	0	1	**85**
Puttalam	10	416	0	19	1	4	0	5	0	1	0	9	0	7	0	1	0	0	**50**
Anuradhapu	9	233	2	24	0	10	0	1	1	2	11	131	0	8	1	9	0	0	**68**
Polonnaruw	10	131	0	32	0	0	2	7	0	0	4	79	0	1	2	16	1	1	**86**
Badulla	7	140	2	37	0	0	0	5	0	1	2	13	3	23	3	15	0	0	**82**
Monaragala	3	82	2	30	0	3	0	6	1	18	10	74	1	19	0	26	0	0	**64**
Ratnapura	55	525	9	134	5	74	2	14	0	12	10	124	0	15	7	96	0	1	**78**
Kegalle	26	341	1	17	0	10	0	5	0	3	3	35	3	28	3	78	0	0	**82**
Kalmune	11	378	0	29	0	1	0	0	1	13	0	4	0	2	0	4	0	0	**62**
SRI LANKA	**442**	**9581**	**41**	**846**	**07**	**180**	**19**	**364**	**07**	**123**	**103**	**1281**	**41**	**517**	**25**	**572**	**02**	**06**	**73**

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 05th April, 2013 Total number of reporting units 336. Number of reporting units data provided for the current week: 246
A = Cases reported during the current week. **B** = Cumulative cases for the year.

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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@sltnet.lk.**

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