



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
Ministry of Health, Nutrition & Indigenous Medicine

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Ocean Pollution

Oceans are one of the precious ecosystems which contain 97% of the water and cover more than 70% of the surface of the planet. They absorb more than 90% of the excess heat and nearly 25% of annual Carbon dioxide (CO₂) emissions in the environment and play a major role in slowing down global warming. Oceans are helping humans by providing food and acting as the source of multiple essential medicines. They create sustainable livelihoods and decent work and thereby contribute to the alleviation of poverty among over three billion people who depend on marine and coastal resources for their livelihood. They play a vital role in ensuring global food security and the health of humans.

In today's context, oceans, seas, and marine resources are reducing their ability as ecosystems due to releasing unwanted waste to oceans by human activity.

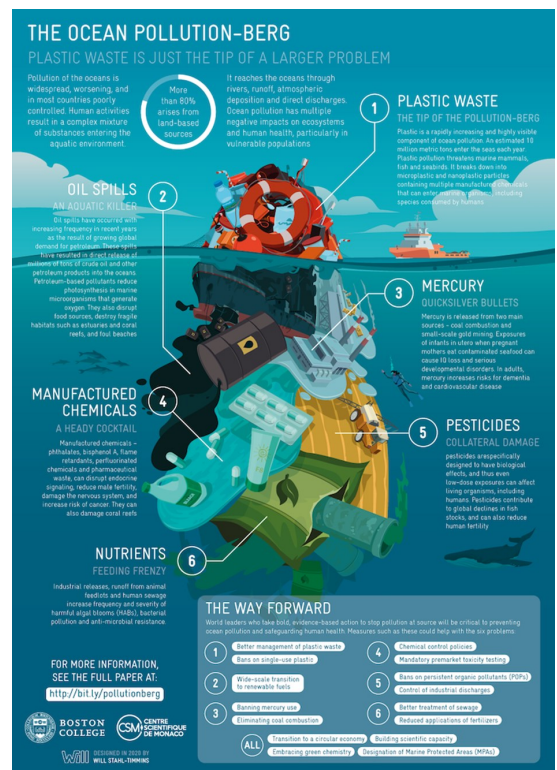


This ocean pollution is considered an inadequately recognized and poorly controlled global pollution. Ocean pollution mainly occurred through land-based sources and they reach through rivers, runoff, deposition, and direct discharges. They can be categorized into two types in relation to the source.

- **Nonpoint source pollution** – this occurs due to runoff and contains pollutants from septic tanks, vehicles, farms, livestock ranches, and timber harvests
- **Point source pollution** – this occurs

due to a single source such as an oil or chemical spill

Mainly recognized ocean pollutants are toxic metals such as mercury, plastics, manufactured chemicals, petroleum, urban and industrial wastes, pesticides, fertilizers, pharmaceutical chemicals, agricultural runoff, and sewage



Impacts of Ocean pollution

There are severe negative health consequences to humans due to ocean pollution and the magnitude of many effects is yet to be identified. These adverse effects mainly occur due to exposing toxic chemicals through eating contaminated seafood.

Mercury is an importantly identified toxic metal pollutant and it is discharged into the water dur-

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ing the combustion of coal and ended up in oceans, seas, and marine resources. Elemental and inorganic mercury is converted into Methylmercury which is the inorganic form by microorganisms in water and soil. Methylmercury accumulates in the food chain. Methylmercury can cross the placenta and cause adverse health effects to the foetus due to maternal consumption of contaminated seafood during pregnancy. It damages the developing brain of the foetus and manifests in children with low IQ, Autism, Attention Deficit Hyperactive Disorder, and learning disorders. The risk for cardiovascular diseases and dementia will be increased for adults due to methylmercury exposure.

Ocean pollution due to plastics is rapidly increasing and it is estimated that 10 million metric tons of plastic waste are released into the oceans, seas, and marine resources annually. They tend to float and collect in large patches in ocean gyres and a common example is “the Pacific Garbage Patch” near California and Hawaii. Plastic waste is long-lasting and slowly releases endocrine-disrupting chemicals such as phthalates, bisphenol A, and flame retardants into oceans. These chemicals can damage the nervous system, cause male infertility, and increase the risk of cancer. Microplastic and nano-plastic particles are released during the degradation of plastic waste, and they contain various manufactured chemicals. These chemicals containing microplastics and nanoplastics can enter marine organisms and eventually, enter the food chain. This process threatens marine animals, and fish and causes adverse health effects to humans.

The advancement of agriculture with the use of chemical fertilizers is seen following industrialization. These chemical fertilizers also play a major role as ocean pollutants. Harmful Algal Blooms (HAB) are identified in previously unaffected regions due to the release of these chemical fertilizers into oceans, seas, and marine resources. These HAB are also known as “red tides”. The development of HAB is triggered by the high concentration of nitrogen and phosphorus in the coastal ocean. HAB can cause serious adverse health effects. Emitted toxins are accumulated in seafood and can lead to severe neurological impairment and death. Respiratory diseases can be developed due to harmful algal blooms as these toxins can be transmitted through the air. These adversities of algal blooms negatively affect the fishing industry and tourism.

Various adverse effects due to ocean pollution can be seen in marine ecosystems. The effects are augmented by the increase in global warming. The severity and the frequency of these algal blooms can be increased with Industrial effluents, runoffs, and sewage which are also identified as ocean pollutants. These pollutants lead to bacterial pollution and antimicrobial resistance. Migration of harmful pathogens towards the poles such as *Vibrio* species is happening due to these effects. Global decline in fish stocks can be witnessed due to pollutants like industrial effluents, pharmaceutical waste, and pesticides. Photosynthesis in marine micro-organisms that emits Oxygen into the atmosphere is reduced by petroleum-based pollutants mixed with the oceans, seas, and marine resources.

Ocean acidification is another increasingly important adverse event due to pollution. It is caused due to absorption of CO₂ into seawater and it destroys the coral reefs, impairs the growth of shellfish, and dissolves Calcium containing micro-organisms.

Prevention of Ocean pollution

All forms of environmental pollution can be prevented by deploying evidence-based strategies targeting the sources of

pollution. Those strategies should be based on law, policy, and technology. Many countries are adopting these evidence-based strategies in the prevention of ocean pollution such as enacting regulations to limit or ban the use of disposable plastics.

The key role played by oceans, seas, and marine resources for the sustainable development of the planet is important and recognized, and Sustainable Development Goals (SDG) also address the issue of ocean pollution. SDGs are adopted in 2015 and goal 14 of SDGs dedicates to “Conserve and sustainably use the oceans, seas and marine resources for sustainable development”. Issues related to oceans, seas, and marine resources are addressed in the 10 targets under SDG 14, as well as many other related SDGs. These 10 targets are focused on marine pollution, protecting marine and coastal ecosystems, minimizing ocean acidification, ending illegal and overfishing, increasing investment in scientific knowledge and marine technology, and adhering to international law on safe and sustainable use of the ocean and its resources.



Rapid actions under good governance, an enabling environment, and sustainable land- and marine-based human activities will be needed to reduce the negative adverse effects of ocean pollution. They should be focused to achieve sustainable use of resources, Eco-friendly production and consumption patterns, and monitoring of human activities. United Nations introduced the decade of ocean science for sustainable development in 2021- 2030 to ensure the support of ocean science for the sustainable management of oceans and achieve SDGs in 2030.

Proper attention to the protection and conservation of the planet's ecosystem is the key step in maintaining human well-being.

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Sources:

- Landrigan PJ, Stegeman JJ, Fleming LE, et al. Human Health and Ocean Pollution. *Ann Glob Health*. 2020;86 (1):151. Published 2020 Dec 3. doi:10.5334/aogh.2831
- The Conversation <https://theconversation.com/why-ocean-pollution-is-a-clear-danger-to-human-health-152641>
- Report – Marine Pollution- Overall state of marine pollution, including sources, effects, and actions, followed by general recommendations, United Nations Environment Programme <https://www.unep.org/resources/report/marine-pollution>
- UN Ocean Conference 2022 - <https://www.un.org/en/conferences/ocean2022/about>
- UN – SDGs – <https://www.un.org/sustainabledevelopment/oceans/>
- National Oceanic and Atmospheric Administration, Department of Commerce, USA <https://www.noaa.gov/education/resource-collections/ocean-coasts/ocean-pollution>

Table 1: Selected notifiable diseases reported by Medical Officers of Health 31st-06th Jan 2022 (1st 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	196	196	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	3	3	0	0	0	0	7	74
Gampaha	188	188	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	4	4	3	3	0	0	0	67
Kalutara	80	80	0	0	0	0	0	0	0	0	12	12	0	0	0	0	0	0	0	4	4	3	3	0	0	0	14
Kandy	72	72	0	0	0	0	0	0	0	0	3	3	2	2	0	0	0	0	0	4	4	0	0	2	2	26	100
Matale	38	38	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	31	100
NuwaraEliya	5	5	1	1	0	0	0	0	3	3	2	2	0	0	0	0	0	0	0	1	1	0	0	0	0	42	92
Galle	24	24	0	0	0	0	0	0	1	1	3	3	0	0	0	0	0	0	0	2	2	1	1	0	0	25	100
Hambantota	14	14	0	0	0	0	0	0	0	0	4	4	2	2	1	1	0	0	0	3	3	0	0	2	2	17	100
Matara	34	34	1	1	0	0	0	0	0	0	9	9	1	1	0	0	0	0	0	0	0	0	0	1	1	69	94
Jaiffna	127	127	2	2	0	0	0	0	3	3	2	2	40	40	0	0	0	0	0	4	4	0	0	0	0	86	93
Kilinochchi	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	100
Mannar	2	2	3	3	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	25	80
Vavuniya	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
Mullaitivu	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	83
Batticaloa	34	34	2	2	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	1	1	1	1	0	0	43	100
Ampara	6	6	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	1	1	1	1	0	0	14	100
Trincomalee	19	19	0	0	0	0	0	0	0	0	4	4	1	1	0	0	0	0	0	1	1	1	1	0	0	17	100
Kurunegala	56	56	1	1	1	1	0	0	0	0	7	7	0	0	0	0	0	0	0	11	11	4	4	7	7	25	97
Puttalam	200	200	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	1	1	2	2	0	0	15	100
Anuradhapur	7	7	0	0	0	0	0	0	0	0	8	8	1	1	0	0	0	0	0	3	3	0	0	7	7	16	83
Polonnaruwa	13	13	0	0	1	1	0	0	0	0	4	4	1	1	0	0	0	0	0	1	1	2	2	13	13	13	100
Badulla	55	55	2	2	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	4	4	1	1	4	4	44	100
Monaragala	8	8	0	0	0	0	0	0	0	0	7	7	1	1	0	0	0	0	0	0	0	0	0	1	1	0	100
Ratnapura	44	44	1	1	0	0	0	0	2	2	12	12	1	1	1	1	0	0	0	0	0	1	1	6	6	26	95
Kegalle	40	40	0	0	0	0	0	0	0	0	6	6	1	1	0	0	0	0	0	4	4	1	1	0	0	10	91
Kalmune	86	86	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	62	100
SRI LANKA	135	1351	15	15	2	2	0	0	9	9	10	102	52	52	2	2	0	0	52	52	22	22	44	44	27	92	

Source: Weekly Returns of Communicable Diseases (esurveillance.epid.gov.lk). T=Timeliness refers to returns received on or before 06th Jan , 2023 Total number of reporting units 357 Number of reporting units data provided for the current week: 332 C**=Completeness

Table 2: Vaccine-Preventable Diseases & AFP

31st– 06th Jan 2022 (1st Week)

Disease	No. of Cases by Province									Number of cases during current week in 2023	Number of cases during same week in 2022	Total number of cases to date in 2023	Total number of cases to date in 2022	Difference between the number of cases to date in 2023 & 2022
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	02	00	00	00	00	00	01	00	00	03	01	03	01	100 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	01	00	00	00	00	00	00	00	01	02	00	02	00	0 %
Measles	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
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	00	00	00	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	00	00	0 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Tuberculosis	00	00	00	07	07	03	00	25	07	49	116	49	116	- 57.7 %

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. **Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

ON STATE SERVICE

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