WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
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WEEKLY EPIDEMIOLOGICAL REPORT SRI LANKA 2022

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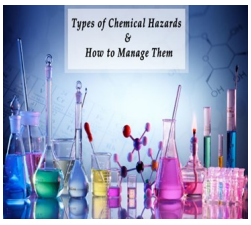
Chemical safety

Chemical safety means the use of occupational chemical substances in a way that ensures the safety and health of humans as well as preventing damage to the environment. So, it includes the synthesis/ extraction of chemicals, transport, and use up to the disposal of chemicals. To ensure safety and prevent damage, the users should have a clear knowledge about the potential hazardous effects, safe handling practices, and effective communication of chemical identity and safe profiles of all the substances used in their occupation.

All the substances in the world are made up of chemicals. So, when the man these are properly used, they can improve human lives and save the environment. But when they are improperly used there will be negative health and environmental hazards. There are many types of chemical hazards in the workplace. Asphyxiants- Carbon monoxide, cyanide, corrosives- sulphuric acid, irritants- nickel, allergens- chlorine, carcinogens- benzene, cadmium, asbestos, teratogens- ionizing radiation, organic mercury compounds, and flammable chemicals- methanol, acetone, propane.

So, these chemicals have different routes of entry into the body such as inhalation of toxic vapours, absorption through the skin when touching a chemical substance by bare hand, injection with sharp contaminated needles, and accidental ingestion of any toxin. The most common workplace exposure method is inhalation while the least is accidental ingestion.
According to the WHO, 10 common chemicals or groups of chemicals have major public health concerns air pollution, arsenic, asbestos, benzene, cadmium, dioxin, and dioxin-like substances, inadequate or excess fluoride, lead, mercury, and highly hazardous pesticides.

Mercury exits in elemental, inorganic & organic forms. Inorganic forms are exposed to the people who are working at coal power stations,



mining for mercury, gold, and other metals, and burning coal for heating, cooking, and industrial processes. Organic forms are exposed through the diet. Elemental or the naturally existing type comes out from the earth's crust through volcanic eruptions and weathering of rocks. Some use mercury for fungicides and when these are mixed with food, bacteria /plankton which consume the food will convert mercury to methyl mercury which then bioaccumulates inside fish and shellfish. Ultimately methyl mercury may accumulate inside our body who is the final predator. Chronic exposure is toxic to the nervous system leading to tremors, insomnia, and neuromuscular and cognitive dysfunction. It can also cause proteinuria and kidney failure and immune dysfunction. It is also corrosive to skin, eyes, and GIT.

Asbestos is a fibre-like material that can cause serious consequences in people who are engaged in heating, ventilation, construction, electrical work, and plumbing. Long-term exposure may cause COPD, mesothelioma, and pleural thickening.

Benzene is a chemical substance that evaporates quickly. It is formed by natural activities like volcanic eruptions and forest fires. It is also a natural component of crude oil, gasoline, and cigarette smoke. Benzene is used to synthesize plastic, resins, nylon and other synthetic fibres, detergents, pesticides, some types of lubricants, rubber, and dyes. Though people who make use of benzene are at a higher risk, tobacco smoke is the major source of exposure. With a high level of exposure, one can develop immediate signs and symptoms like vomiting, convulsions, and breathing problems due to its irritant

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nature. Long exposure may cause bone marrow suppression leading to anaemia, excessive bleeding and immune suppression, irregular menstruation, and reduction of the size of ovaries in females. It also acts as a carcinogen and causes leukaemia. New-borns may have a low birth weight, delayed bone formation, and bone marrow destruction.

Arsenic is also widely distributed throughout the earth's crust. Natural and human activities are responsible for the release of this arsenic into the environment. Naturally, it comes out from volcanic eruptions. Out of organic and inorganic forms, the inorganic form is the most toxic as it is accumulated inside the body. Organic arsenic compounds are in sea foods and are less harmful as these are rapidly eliminated from the body. Inorganic forms are found in some underground water sources in Bangladesh, India, China, Mexico, and the USA. So, the arsenic will accumulate inside people who drink this water as well as use this water for food preparation, crops, and industrial processes. Arsenic is also used to synthesize glass, paper, textiles, wood preservatives and to a limited extent in some pesticides, food additives, and pharmaceuticals. It is also used as an alloying agent. But most interesting thing is that people who smoke tobacco may also be exposed to arsenic as the tobacco plant absorbs arsenic naturally from the soil. Chronic exposure may cause peripheral neuropathy, myocardial infarctions, diabetes mellitus, and cancer of internal organs. Characteristic features are skin lesions like skin pigmentation, hyperkeratosis of palms and soles, and cancers of the skin. Chronic arsenic exposure in pregnant females may get adverse pregnancy outcomes. Arsenic exposure may increase infant mortality rate and affect cognitive development and memory in children.

Lead is also found in the earth's crust. Extensive use of lead has led to environmental contamination and many public health problems. Lead is used for leaded paint, aviation fuel, lead batteries used in vehicles, lead pipes, lead-glazed containers, a certain type of cosmetics- like eye kajal (kohl), and traditional medicine used in India, Vietnam & Mexico. So, inhalation by smelting, recycling, and stripping of paint, burning of aviation fuel, ingestion of lead-contaminated water (from lead pipes), food (from lead-glazed containers), and contact of lead with skin by using cosmetics are the methods by which lead is exposed to humans. Very young children (including foetus) and malnourished children are at a comparatively greater risk of negative health consequences. A high level of exposure to lead can cause irreversible damage to the central nervous system resulting in coma, convulsions, and sometimes death. Even a low level of exposure may result in a reduction in IQ, behavioural changes such as reduced attention span, increased anti-social behaviour, etc. chronic lead exposure may also lead to anaemia, hypertension renal failure, immunotoxicity, and toxicity to reproductive organs.

Cadmium is usually present at low levels in the environment. But human activities have contributed to increased cadmium exposure in the population. Cadmium is used in electrical and electronic devices, toys, jewels, and some plastics. So inappropriate dumping of these items may result in comparatively high levels of cadmium accumulating in the environment. So, cadmium will accumulate inside molluscs, vegetables, cereals, starchy foods & ultimately the human body. Also, people are exposed to cadmium through tobacco smoke and when working in industries that use cadmium. Cadmium is toxic to the kidneys, skeletal, and respiratory systems (e.g., lung cancers).
Fluoride is essential for the strength of the enamel. Reduced fluoride intake may cause dental caries. On the other hand, excessive fluoride intake also has negative consequences like tooth enamel and skeletal fluorosis (osteosclerosis, calcification of tendons & ligaments, and bone deformities). Some groundwater sources are naturally rich in fluoride esp. in warm climates. So, when people use this water for drinking, preparation of food, and irrigation of crops they will be exposed to high levels of fluoride and at a higher risk of fluorosis.

So, it is important to know how to ensure chemical safety in an institution that handles them. The Occupational safety & health administration (OSHA) has made a few recommendations to effectively control chemical hazards. The first one is the elimination of a hazardous chemical completely or substituting it with less hazardous chemicals. The second one is implementing policies, and guidelines and getting a good knowledge about the side effects and safety precautions when handling chemicals. So, workers should know emergency evacuation and reporting procedures, first aid for medical emergencies, and what to do next if a co-worker gets injured. The third one is engineering control –which means creating a safe environment accordingly and labelling the chemicals with their names and a "danger sign" whenever necessary. 'Globally Harmonized System of Classification and Labelling of Chemicals (the GHS) is an international system of chemical classification, labelling, and hazard communication adopted by the United Nations in 2003. The United States participated in the development of the GHS and U.S. regulatory agencies are adopting the system.' So, this classification gives standard labels for each chemical regardless of the manufacturer. So those standard labels include signal words like danger /warning, hazard statement- which describes the chemical in short with keywords, pictograms- which are pictures of physical or health hazards, name, and address of the manufacturer. According to GHS, the manufacturer should also provide safety data sheets that give information about its safety profile and how to prevent any hazards related. Storing of materials should be done properly and in ventilated, dry, cool areas. Flammables should not be under very hot temperatures. The final point is the usage of personal protective equipment like gloves, respirators, full body suits, and goggles when handling chemicals. It is also of utmost importance to keep the work area clean, clean the area at least once in a shift, and wash your hands after handling chemicals though you wear PPE. The workers should not eat or drink in the work area or smell or taste any substance to identify them.

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Table 1: Selected notifiable diseases reported by Medical Officers of Health 25th– 01st Jul 2022 (26th 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	58	5872	1	3	0	3	0	0	0	5	4	88	0	0	0	2	0	0	0	16	0	4	0	2	**14**	**97**
Gampaha	15	3463	0	4	0	1	0	0	0	12	2	79	0	0	0	6	0	2	3	24	0	20	4	24	**5**	**75**
Kalutara	13	1996	0	7	0	1	0	1	0	6	4	186	0	2	0	2	0	2	1	33	0	14	0	1	**2**	**100**
Kandy	19	1850	0	12	0	0	0	2	0	4	5	77	0	20	0	7	0	0	2	34	0	4	0	13	**11**	**99**
Matale	46	468	0	2	0	0	0	0	0	0	4	64	0	3	0	1	0	0	1	10	0	1	3	186	**18**	**99**
NuwaraEliya	10	114	0	13	0	0	1	2	0	0	3	36	0	10	0	1	0	0	2	24	0	2	0	0	**21**	**98**
Galle	12	1954	0	5	0	0	0	0	0	0	2	223	0	11	0	2	0	0	0	38	0	12	0	0	**12**	**98**
Hambantota	92	658	0	24	0	0	0	0	0	2	19	120	0	21	0	3	0	0	2	18	0	6	8	249	**16**	**98**
Matara	60	777	0	10	0	0	0	0	0	0	12	144	0	6	0	1	0	0	0	19	0	6	0	160	**28**	**100**
Jaffna	51	2131	2	27	0	2	0	53	0	24	1	19	2	401	0	5	0	4	2	67	0	8	0	0	**64**	**88**
Kilinochchi	4	87	0	4	0	0	0	0	1	19	0	11	0	8	0	0	0	0	0	4	0	0	0	1	**33**	**100**
Mannar	2	165	0	1	0	0	0	0	0	0	2	17	0	3	0	2	0	0	0	5	0	15	0	0	**20**	**77**
Vavuniya	3	56	0	0	0	1	0	2	0	0	0	12	0	1	0	0	0	0	0	5	0	0	0	2	**2**	**79**
Mullaitivu	0	39	0	3	0	0	0	2	0	3	0	20	0	5	0	0	0	0	0	4	0	1	0	1	**23**	**95**
Batticaloa	26	883	0	44	1	7	0	0	0	17	0	27	0	0	0	1	0	1	1	8	0	23	0	1	**35**	**100**
Ampara	4	100	0	7	0	1	0	0	0	17	2	72	0	1	0	1	0	0	1	35	0	14	0	12	**10**	**97**
Trincomalee	4	931	0	22	0	0	0	1	0	2	0	17	0	3	0	4	0	0	0	29	0	4	0	0	**18**	**85**
Kurunegala	63	1505	1	10	0	1	0	0	0	4	1	82	0	18	0	0	0	1	0	36	1	20	8	278	**8**	**97**
Puttalam	29	1155	0	3	0	0	0	0	0	0	0	13	0	6	0	0	0	0	0	6	1	18	0	4	**15**	**89**
Anuradhapur	8	213	0	8	0	2	0	1	0	5	1	110	1	17	0	2	0	1	0	28	0	23	0	218	**9**	**86**
Polonnaruwa	0	67	0	4	0	0	0	0	0	1	0	65	0	0	0	2	0	0	0	8	0	3	5	217	**17**	**85**
Badulla	24	599	0	11	0	1	0	0	0	5	1	111	1	28	0	77	0	0	3	35	0	8	0	14	**14**	**100**
Monaragala	22	240	0	5	0	1	0	4	0	2	3	198	1	18	0	27	0	0	1	37	1	23	1	80	**9**	**100**
Ratnapura	53	1330	0	26	0	5	0	3	0	24	13	499	1	13	1	15	0	0	2	44	0	25	0	119	**12**	**94**
Kegalle	97	1158	1	9	0	5	0	1	0	5	4	292	1	12	0	3	0	0	1	58	1	29	0	14	**8**	**100**
Kalmune	15	585	0	23	0	0	0	1	0	5	0	14	0	1	0	1	0	0	0	31	0	21	0	0	**30**	**99**
SRILANKA	**17**	**28396**	**5**	**287**	**1**	**31**	**1**	**73**	**1**	**162**	**83**	**2596**	**7**	**608**	**1**	**16**	**0**	**11**	**22**	**656**	**4**	**304**	**29**	**1596**	**17**	**93**

Source: Weekly Returns of Communicable Diseases (esurvillance.epid.gov.lk). T=Timeliness refers to returns received on or before 01st July , 2022 Total number of reporting units 361 Number of reporting units data provided for the current week: 294 C**-Completeness

Table 2: Vaccine-Preventable Diseases & AFP

25th– 01st Jul 2022 (27th 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	00	00	00	00	00	00	00	01	37	24	60.8 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	00	00	00	00	00	00	00	00	01	01	01	35	46	- 34.8 %
Measles	00	00	01	00	00	00	00	00	00	01	00	13	10	20 %
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	05	02	150 %
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	01	00	0 %
Tuberculosis	00	00	00	04	00	00	00	08	06	18	35	3050	2696	13.1 %

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

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