

Water Pollution and Human Digestive System in Course of Study Related to the Biological Science at Various Levels

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Abstract - Water is the mother liquor of all forms of life and it is also solvent, various kinds of atoms and particles etc are also dissolved in the water. In water the bacteria, viruses, protozoan etc. are also developed, and these are also making polluted water. The water is polluted by various kinds of harmful waste materials & particles. Both type of pollutants either biotic pollutants (bacteria, Viruses, fungi, protozoan, etc.) or abiotic pollutants create various kinds of diseases in the digestive system of human beings. This study recommends that awareness about cleaning of surrounding and not only water, but also cleaning of air, land etc. to protect the water against the agents of pollution. It is also essential that the study of water & water pollution with the study of human digestive system.

Keywords: Water, Pollution, Pollutants, Digestive System, Diseases.

1. Introduction

Water is needed in almost every sphere of human activity. It is required consumption or indirectly for washing, cleaning, cooling, transportation or even for waste disposal. Important sectors of human activity which require water can be grouped as follows:

- 1) Irrigation.
- 2) Industries.
- 3) Livestock Management.
- 4) Thermal Power generation.
- 5) Domestic Requirements.
- 6) Hydro-electric generation, fisheries, navigation and recreational activities.

Water is an important environmental factor in sustaining various forms of life in the biosphere. Plants absorb nutrients from Soil moisture and ground water, Excess water evaporates in the form of water vapour from aerial plant surfaces through transpiration. Animals also use water for their metabolism, growth and reproduction. Water, being universal solvent plays an important role in most biological processes of organisms. Thus, water circulates not only through atmosphere and lithosphere, but also through the biosphere.

Water is the mother liquor of all forms of life. It is the vital essence, miracle of nature, and the great Sustain of life. The essentiality of water for living System is quite evident as without water, there is no life. The essentiality of water is a continuous reminder of the aqueous origin of life. It was in the solvent water that the chemical reactions of biological processes evolved. All aspects of cell structure and function are adapted to the physical and chemical properties of water. The strong attractive forces between water molecules result in water's solvent properties. A meager tendency of water to ionize is of utmost importance to the structure and function of biomolecules. The water molecule and its ionization products (H^+ and OH^-) greatly influence the structure, assemblage and properties of all the cellular components, including enzymes and other proteins, nucleic acids and lipids. Water is needed not only for biochemical reactions, but also for transporting substances, across membranes, maintaining body temperature, dissolving waste products for excretion and producing digestive fluid.

2. Water Pollution

The addition of any substance change in water's physical and chemical characteristics in any way which interferes with its use for legitimate purposes. Normally water is sense. It contains impurities of various kinds, dissolved as well as suspended. These include de dissolved gases (H_2S , CO_2 , NH_3 , N_2), dissolved minerals (Ca, Mg, Na Salts), suspended matter (clay, silt, sand) and even microbes.

These are natural impurities derived from atmosphere, catchments areas and the soil. They are in very low amounts and normally do not pollute water it is, potable. Polluted waters, however, are turbid, unpleasant, bad smelling, unfit for drinking, bath, and washing or other purposes. They are harmful and are vehicles of many diseases as and cholera, dysentery, typhoid, hepatitis etc.

3. Human Digestive System

The Digestive system includes the alimentary canal or gastrointestinal tract and other structures. The other structures involved in the functions of gastrointestinal tract as teeth tongue, pancreases, liver and gallbladder.

The alimentary tract provides the body a continual supply of water, electrolytes, vitamins, and nutrients.

- Movement of food through the alimentary tract.
- Secretion of digestive juices and digestion of food.
- Absorption of water, various electrolytes, vitamins, and digestive products.
- Circulation of blood through the gastrointestinal final organs to carry away the absorbed substances.
- Control of all these functions by local, nervous, and hormonal system.

1. Simple Bio-Degradable Wastes

Pollution which can be minimized or eliminated and its components degraded into simpler, harm-less constituents by biological activity is termed as bio-degradable pollution. Dead and decaying remains of plant and animals, products of their metabolic activity, facial remains, excreta, waste waters, and materials which originate from day to day of activity in a domestic establishment, agricultural wastes, wastes from agro-based industries, tannery effluents etc., come under this category. Various lipids, gets, oils, proteins, carbohydrates, nucleic acids, urea, cellulose hemi-cellulose, lignine, pectin etc. along with ash, dust and detergent bearing water containing plenty of phosphates from the major part of simple bio-degradable pollution.

Biodegradable pollution which mainly involves water and soil causes little range problems. Actually, it is the enormous quantity of sewage and organic wastes which causes difficulties. Large towns and cities discharge a tremendous volume of waste material for handling and treatment of which adequate facilities are often not available. Smaller amounts of such pollutants pose no problems as the biological agencies of degradation quickly decomposed most of the Organic matter forming carbon dioxide, water and mineral matters. Problems associated with bio-degradable pollution can be summed up as follows:

- (i) The problem of odorous gases and volatile Substances derived from organic cost wastes.
- (ii) The problem of abundance of infectious microbes.
- (iii) The problem of oxygen deficit caused by decomposition of organic matter.
- (iv) The problem of generation of plenty of plant nutrients in water bodies.

2. Complex Bio-Degradable Wastes

Some compounds which have resistance to the natural agencies of decay and decomposition. These are often harmful substances which persist in the environment for long duration of time during which they a remarkable degree of taken up in

the biosphere, accumulated and bio-magnified to concentration potentially toxic to organisms at higher trophic levels in the food chain. Many of these chemicals are Carcinogenic, teratogenic and mutagenic in nature.

Pollutants grouped together under the Category of wastes resistant to degradation, organic substances produced naturally or are synthesized by man. Many of these are such chemicals which have caused much concern due to their wide-spread use and dissemination.

Broadly speaking these chemicals can be grouped into the following three categories.

- (i) Pesticides and allied chemicals.
- (ii) Crude petroleum and its derivatives.
- (iii) Polymers plastics, plasticizers and other wastes.

4. Non Degradable Pollutants

Pollution caused by substances, on which biotic and abiotic agencies of decomposition are ineffective is a unique type of pollution. Chemical causing it are a part and parcel of inorganic matter which constitutes this planet. Toxic trace elements and heavy metals come under the category of non-degradable pollutants. The problem caused by these elements is in fact due to their concentration in the environment in bio-available state. They cannot be destroyed. Dispersal and dilution in such a manner that these toxic elements are longer available to the biosphere in toxic state and quantifies, eliminate this type of pollution.

Hydrogen, carbon, nitrogen, oxygen, sodium, potassium, magnesium, phosphorous, Sulphur and calcium collectively constitute living organism by weight. about 99.5% of a Fourteen other elements which include : boron, Cobalt, copper, fluorine, silicon, vanadium, chromium, manganese, iron, selenium, molybdenum, tin, iodine and zinc make up the remaining 0.5% of the mass of living organism. These elements are considered essential trace elements for the biosphere. The rest of the elements which occur on this planet are either non-essential for the growth and development of living beings or their function within biological system has not been demonstrated so far.

5. Production of Pollutants

Is it comes as the "by-product of man's action" - they are the residues of things human make, use, and throw away their cans and bottles, metals and plastic caps, waste rock and mill tailings, pesticides and herbicides, automobile exhausts and industrial discharges. They are concomitants of a technological society with a high standard of living. They increase both because of population increases and because of

an increasing expectation for higher, living standards more is made, used, and thrown away.

Normally water is never pure in a chemical sense. It contains impurities of various kinds, dissolved as well as suspended. These include dissolved gases (H_2S , CO_2 , NH_3 , N_2) dissolved minerals (Ca, Mg, Na salts) suspended matter (clay, silt, sand) even microbes. These are natural impurities derived from atmosphere, Catchment areas and the soil. Polluted waters, however, are turbid, unpleasant, bad smelling, unfit for drinking, bath, and washing or other purposes. They are harmful and are vehicles of many diseases cholera, dysentery, typhoid, hepatitis etc.

6. Intestinal Diseases caused by water Pollution

Many people around the world have at one point been victims of the diseases caused by water pollution either after consuming or bathing in polluted water. Some have also suffered after consuming plant or animal food that lives or has been raised by polluted water.

- 1) Cholera (caused by bacteria called *Vibrio cholera*)
- 2) Diarrhia (caused by bacteria, viruses and profezouns)
- 3) Typhoid (caused by bacteria called *Salmonella typhosa*)
- 4) Amoebiasis (caused by Amoeba Protozoan)
- 5) Dysentery (caused by Bacteria)
- 6) Schistosomiasis (*Bhilharzia*) caused by parasitic worms
- 7) Cancer
- 8) Hepatitic (viral disease)
- 9) Intestinal worms and round worms, whip worms, hookworms and round worms
- 10) Dracunculiasis (Guinea worm Disease)
- 11) Lead Poisoning
- 12) Fluorosis
- 13) Arsenicosis
- 14) Polio (Viral Disease)
- 15) Trachoma (Eye infection)
- 16) Gastroenteritis, encephalitis, stomach cramps and Ulcers and Respiratory infections
- 17) Neurological Problems, Liver and kidney damage.

7. Conclusion and Recommendations

Water is the mother liquor of all forms of life. The essentiality of water for living systems is quite evident as without water, there is no life. The essentiality of Water is a continuous reminder of the aqueous origin of life. a solvent and it dissolves various kinds of minerals and particles. It may dissolve also pollutants from environment. The polluted water also enters in the human body with the drinking of water and dissolved polluted water in food materials by eating food which is also polluted with the mixing of water. The polluted

water enters in the human digestive I tract buckle cavity - esophagus - stomach - Intestine and then also enters in the digestive glands. With the entering of pollution through water, the various kinds of disease created with reactions of pollutants with digestive juices.

Since the life sciences along with the physical sciences have received much more attention to revise and refresh courses of study, there is an urgent need now to lay emphasis on the protection of environment all over the world and thence to provide a better life to the living beings of this planet. In order to maintain a proper balance between the environment and human survival it becomes imperative to incorporate concepts proper environment and that have direct of immediate concern implications not only to theory but practical work and their subsequent application for environmental protection and human survival. This is also significant with the viewpoint to bring out social awareness towards the protection of environment, human Survival and then to maintain the ecological balance.

Based on the findings obtained from the present study, the following recommendations can be advanced since the incorporation of units of present study plays a significant role in bringing about:

- 1) Awareness towards health and hygiene through cleanliness of the local, natural resources (e.g. the rivers, drainage, ponds, lakes, etc.).
- 2) Awareness for maintaining a proper balance among man, plants, animals, water, oxygen, carbon-dioxide, nitrogen and ozone layer so that the proper balance between the not be disturbed.

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Citation of this Article:

Dr. Ashwani Kumar Gupta, “Water Pollution and Human Digestive System in Course of Study Related to the Biological Science at Various Levels” Published in *International Research Journal of Innovations in Engineering and Technology - IRJIET*, Volume 7, Issue 8, pp 26-29, August 2023. Article DOI <https://doi.org/10.47001/IRJIET/2023.708004>
