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Health Impact of Water Pollution

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It is a well-known fact that clean water is absolutely essential for healthy living. Adequate supply of fresh and clean drinking water is a basic need for all human beings on the earth, yet it has been observed that millions of people worldwide are deprived of this. The main source of freshwater pollution can be attributed to discharge of untreated waste, dumping of industrial effluent, and run-off from agricultural fields. Polluted water like chemicals in drinking water causes problem to health and leads to water-borne diseases which can be prevented by taking measures can be taken even at the household level.

Groundwater and its contamination

Many areas of groundwater and surface water are now contaminated with heavy metals and POPs (persistent organic pollutants) that have an adverse effect on health. Water-borne diseases and water-caused health problems are mostly due to inadequate and incompetent management of water resources. Water gets contaminated in many different ways, some of these are mentioned below.

- **Pesticides**. Run-off from farms, backyards, and golf courses contain pesticides such as DDT that in turn contaminate the water. Its effects on the ecosystems and health are endocrine and reproductive damage in wildlife. Groundwater is. susceptible to contamination, as pesticides are mobile in the soil.

- **Sewage**. Untreated or inadequately treated municipal sewage is a major source of groundwater and surface water pollution. The organic material that is discharged with municipal waste into the watercourses uses substantial oxygen for biological degradation thereby upsetting the ecological balance of rivers and lakes. Sewage also carries microbial pathogens that are the cause of the spread of disease.

- **Synthetic organics**. Many of the synthetic compounds in use today are found in the aquatic environment and accumulate in the food chain. POPs or Persistent organic pollutants,

represent the most harmful element for the ecosystem and for human health, for example, industrial chemicals and agricultural pesticides. These chemicals can accumulate in fish and cause serious damage to human health. Where pesticides are used on a large-scale, groundwater gets contaminated and this leads to the chemical contamination of drinking water.

- **Acidification**. Acidification of surface water, mainly lakes and reservoirs, is one of the major environmental impacts of transport over long distance of air pollutants such as sulphur dioxide from power plants, other heavy industry such as steel plants, and motor vehicles.

Chemicals in drinking water

Chemicals in water can be both naturally occurring or introduced by human interference and can have serious health effects.

- **Fluoride**. Fluoride in the water is essential for protection against dental caries and weakening of the bones, but higher levels can have an adverse effect on health. In India, high fluoride content is found naturally in the waters in Rajasthan.

- **Arsenic**. High concentrations of arsenic in water can have an adverse effect on health. A few years back, high concentrations of this element was found in drinking water in six districts in West Bengal. A majority of people in the area was found suffering from arsenic skin lesions. It was felt that arsenic contamination in the groundwater was due to natural causes.

- **Lead**. Pipes, fittings, solder, and the service connections of some household plumbing systems contain lead that contaminates the drinking water source.

- **Recreational use of water**. Untreated sewage, industrial effluents, and agricultural waste are often discharged into the water bodies such as the lakes, coastal areas and rivers endangering their use for recreational purposes such as swimming and canoeing.

- **Petrochemicals**. Petrochemicals contaminate the groundwater from underground petroleum storage tanks.

- **Chlorinated solvents**. Metal and plastic effluents, fabric cleaning, electronic and aircraft manufacturing are often discharged and contaminate groundwater.

Diseases

Water-borne diseases are infectious diseases spread primarily through contaminated water. Though these diseases are spread either directly or through flies or filth, water is the chief medium for spread of these diseases and hence they are termed as water-borne diseases. A large number of chemicals that either exist naturally in the land or are added due to human activity dissolve in the water, thereby contaminating it and leading to various diseases.

- **Pesticides**. The organophosphates and the carbonates present in pesticides affect and damage the nervous system and can cause cancer. Some of the pesticides contain carcinogens that exceed recommended levels. They contain chlorides that cause reproductive and endocrinal damage.

- **Lead**. Lead is hazardous to health as it accumulates in the body and affects the central nervous system. Children and pregnant women are most at risk.

- **Fluoride**. Excess fluorides can cause yellowing of the teeth and damage to the spinal cord and other crippling diseases.

- **Nitrates**. Drinking water that gets contaminated with nitrates can prove fatal especially to infants that drink formula milk as it restricts the amount of oxygen that reaches the brain causing the 'blue baby' syndrome. It is also linked to digestive tract cancers. It causes algae to bloom resulting in eutrophication in surface water.

- **Petrochemicals**. Benzene and other petrochemicals can cause cancer even at low exposure levels.

- **Chlorinated solvents**. These are linked to reproduction disorders and to some cancers.

- **Arsenic**. Arsenic poisoning through water can cause liver and nervous system damage, vascular diseases and also skin cancer.

Preventive measures

Water-borne epidemics and health hazards in the aquatic environment are mainly due to improper management of water resources. Proper management of water resources has become the need of the hour as this would ultimately lead to a cleaner and healthier environment.

In order to prevent the spread of water-borne infectious diseases, people should take adequate precautions. The city water supply should be properly checked and necessary steps taken to disinfect it. Water pipes should be regularly checked for leaks and cracks. At home, the water should be boiled, filtered, or other methods and necessary steps taken to ensure that it is free from infection.