FAQs

1:What is water pollution?

- Water pollution is any chemical, physical or biological change in the quality of water that has a harmful effect on any living thing that drinks or uses or lives (in) it. When humans drink polluted water it often has serious effects on their health. Water pollution can also make water unsuited for the desired use. Domestic, commercial and industrial effluents eg, paper mills, slaughter houses, contaminate the water with organic pollutants. Micro-organisms which decompose the organic matter and consume oxygen and reduce the DO level of the aquatic system thereby killing the aquatic organisms.
- Waterborne infectious enteric diseases like typhoid, bacillary dysentery, cholera and amoebic dysentery are the predominant health hazards arising from contaminated drinking water.

2:What type of health issues can be related to water quality?

The presence of certain contaminants in our water can lead to health issues, including gastrointestinal illness, reproductive problems, and neurological disorders. Infants, young children, pregnant women, the elderly, and immunocompromised persons may be especially at risk for becoming ill after drinking contaminated water. For example, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Federal law requires that systems reduce certain contaminants to set levels, in order to protect human health. Microorganisms like, Bacteria, viruses, protozoa and parasitic worms that enter water from domestic sewage and animal wastes, causes disease. In developing countries they are the major cause of sickness and death, prematurely killing an average of 13,700 people every day.

3: Write in detail about the Sources of Water ?

Life is possible on earth due to the presence of water. Nearly three-fourths of the earth's surface is covered with water. Water is also found below the earth's surface and it is present in air in the form of water vapour.

These are the major source of water ie, rainwater, oceans, rivers, lakes, streams, ponds and springs are natural sources of water. Dams, wells, tube wells, hand-pumps, canals, etc, are man-made sources of water.

Rain Water: Rain water collects on the earth in the form of surface water and underground water.

Underground Water: Some portion of the rainwater seeps through the soil on to the rocks below. Sometimes due to high pressure, this water comes out in the form of springs. It can be obtained by digging wells, etc.

Surface Water: Water present on the surface of the earth in the form of oceans, rivers, lakes, ponds and streams is called surface water. It is inter connected, ie the water in rivers and lakes comes from rain and melting of snow on mountains.

4: Mention the problem we are facing in related to water?

→ Inadequate access to safe drinking water by over 1.1 billion people
→ Groundwater over drafting leading to diminished agricultural yields
→ Over use and pollution of water resources harming variety of different types of life found on Earth.
→ Regional conflicts over scarce water resources sometimes resulting in warfare.

Ensuring availability of water for future generation's s most important question.

5:How do contaminants (germs and chemicals) get into my drinking water?
There can be many sources of contamination of our water systems. Here is a list of the most common sources of contaminants:

- Naturally occurring chemicals and minerals (for example, arsenic, radon, uranium)
- Local land use practices (fertilizers, pesticides, livestock, concentrated animal feeding operations)
- Manufacturing processes
- Sewer overflows
- Malfunctioning waste water treatment systems (for example, nearby septic systems)

Many contaminants that pose known human health risks are regulated by the United States Environmental Protection Agency (EPA). EPA makes sure that water meets certain standards, so you can be sure that high levels of contaminants are not in your water.

6:What is water quality improvement?

Water treatment, or conditioning, is the processing of water, by any means, to modify, enhance, or improve its quality or to meet a specific water quality need, desire, or set of standards. Water treatment involves disinfecting and purifying untreated ground and surface water. Water quality is important for health, and it is good for appliances, too!

7: Define water is a good Reactant and Lubrecant?

- Water, being a good solvent, allows many reactions to occur.

- Water is used in photosynthesis to make NADPH2, and ultimately sugar.

- These reactions release oxygen gas, which is vital to human life.

Without water in photosynthesis, organisms would not be able to obtain energy, and life as we know it would be impossible.

Lubrecant:

- When bones meet at a joint, they need a fluid between the bones to prevent scraping against each other.
- That fluid is called a synovial fluid, which is made mainly of water.
- Many internal organs have fluid around them to keep them protected. Examples: 1:Cerebro-spinal fluid in Brain, 2:Lungs, 3: Mix of fluids in eyes.

8:Explain how Pollution of water takes place?

More than 1.3 billion people are at risk from environmental pollution in the developing countries of South East Asia and sub-Saharan Africa and 1.4 billion people lack access to safe water. There is always a clear link between poverty, ignorance and pollution.

Source of Pollution

Pollution is defined as the presence of impurities or pollutant substances in sufficient concentration levels, causing harmful effects on human beings, animals, plant life or material resources when exposed for a sufficient duration of time, thus reducing the quality of life in the environment.

Pollution is the effect of undesirable changes in our surroundings that have harmful effects on plants, animals and human beings. The main sources of pollutants includes agricultural, industrial, municipal and transportation operations. Agricultural pollutants include insecticides, herbicides, pesticides, natural and chemical fertilizers, drainage from animal feedlots, salts from field irrigation, and silts from soil erosion.

9: How Toxic chemicals / wastes get in to water,define what is BOD?

Toxic chemicals / wastes are not easily degradable by biological means. DDT and mercury are also included under this category. The water contaminated by them is highly poisonous and if contacted

or consumed by plants or animals, may prove fatal. Pesticides and herbicides which wash off from the land during rainy season into the water sources.

These wastes, when discharged into water sources decompose using large amounts of oxygen from water rendering water useless. The pollution level is indicated by a parameter, BOD (bio-chemical oxygen demand). With oxygen depletion, some types of fish perish in these water bodies. Urban sewage is another example of organic waste, generally released into rivers, lakes or tanks in most of the developing countries.

10:Define Importence of water for Cell life?

Important for Cell life: Water is a carrier for distributing essential nutrients to cells mainly minerals, vitamins and glucose.

Chemical and metabolic activity: It removes waste products from the body including toxins that the organs' cells reject, and removes them through urines and feces.

Transport of nutrients: Water helps in the biochemical break-down of food, at the same time kidneys and liver use it to help flush out waste, as do your intestines. Waste through perspiration, urination, and defecation. Water is at the center of life and vital nutrient.

11:Explain what is Body temperature regulation and Elimination of water:?

Body temperature regulation: Water has a large heat capacity which helps limit changes in body temperature in a warm or a cold environment. The body begins to sweat, and the evaporation of water from the skin surface very efficiently cools the body.

Elimination of water: It acts an effective lubricant around joints. It also acts as a shock absorber for eyes, brain, spinal cord and even for the fetus through amniotic fluid.

12: Mention what are the Water borne diseases?

According WHO report many backward countries suffering from water related diseases and cause 3.4 million deaths each year. Contaminated water can cause many types of diarrhoeal diseases, including Cholera, and other serious illnesses such as Guinea worm disease, Typhoid, and Dysentery.

Major Disease-causing agents:

Microorganisms like, Bacteria, viruses, protozoa and parasitic worms that enter water from domestic sewage and animal wastes, causes disease. In developing countries they are the major cause of sickness and death, prematurely killing an average of 13,700 people every day.

Microorganisms causing diseases that characteristically are waterborne prominently include protozoa and bacteria, many of which are intestinal parasites, invade the tissues or circulatory system through walls of the digestive tract.

13: Mention different Environment pollution?

Modern hazards resulting from rapid development without environmental safeguards: Urban air pollution, contaminated water and soil, noise, and lack of proper sanitary disposal for increasing quantities of waste from household garbage to industrial and medical waste.

The ultimate cause of pollution is human activity itself. Pollution is a human contribution to nature. Human activities mainly include: industries for various human needs both directly and indirectly, agriculture for food production and industrial needs, health care for health of human beings and animals, transport for mobility of human beings, dwelling for settlement in city or villages, energy for various direct human and industrial needs. The nature and intensity of pollution may be different in different industry. In others, it may be invisible, indirect or negligible. In such a broad sense, no industry is free of pollution

The nature and concentration of a pollutant determine the severity of its detrimental effects on human health. Impurities released directly from the source of origin are known as primary pollutants, for example, CO, SO_2, NO. When contaminants like HC, NO, O_3, combine in the atmosphere (moisture, sunlight) to form new products like PAN (peroxy acetyl nitrate), petrochemical smog, formaldehyde, which are known as secondary pollutants.

14: What is Oxygen-demanding wastes and Water-soluble inorganic chemicals?

Oxygen-demanding wastes: Organic wastes, which can be decomposed by oxygen-consuming bacteria. Large populations of bacteria supported by these wastes can deplete water of dissolved oxygen gas. Without enough oxygen, fish and other oxygen consuming forms of aquatic life die.

Water-soluble inorganic chemicals: Acids, salts, and compounds of toxic metals such as lead and mercury. Such dissolved solids can make water unfit to drink, harm fish and other aquatic life, decrease crop yields, and accelerate corrosion of equipment that uses of water.

15:What are the standard was adopted by the Bureau of Indian Standards with the Potable Water and Drinking-water Quality?

The various parameters cove Drinking-water Quality red include color, odour, pH, total dissolved solids, hardness, alkalinity, elemental compounds such as iron, manganese, sulphate, nitrate, chloride, fluoride, arsenic, chromium, copper, cyanide, lead, mercury, zinc and coliform bacteria.

Potable Water must fallow WHO standards, WHO's Guidelines for Drinking-water Quality, set up in Geneva, 1993, are the international reference point for standard setting and drinking-water safety.

They include:

Micro-organisms

Chemicals such as nitrate and pesticides

Metals such as lead and copper

The way water looks and its tastes

Microbiological parameters, Units of Measurement Point of compliance,0 number/100ml ,in Consumers' taps, both *Enterococci and Escherichia coli* (*E. coli)*