PGD in WASH

Assignment Three

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Student: J. Flavell

1. ***Explain six major non-domestic uses of water***

1. Irrigation

   Irrigation refers to the artificial application of water to assist in the production of crops, trees and pastures. It includes surface irrigation, sprinkler irrigation and drip-feed irrigation.

2. Industrial

   Many industrial processes require large amounts of water. It can be utilised through piping into industrial areas or sourced and treated from wells at the site of use. Water can be used as an ingredient in products, as a cleaning agent, to transport products, to cool and boil products among other uses.

3. Mining

   Mining uses large amounts of water for the extraction of minerals from solids such as coal, gravel, iron and sand. It is also used in extraction of liquids such as oil and gas.

4. Power generation

   Water is used in power generation through hydroelectric power plants in dams or rivers - the force of water flow turns turbines which create electricity. It is also used in geothermal production of electricity - the use of heated earth converting water into steam

5. Aquaculture

   Aquaculture is the technique of farming fish, crustaceans and molluscs for food, controlled water ponds or contained areas are used for the hatching and development of the produce.

6. Recreational

   People use water in recreational activities that include boating, swimming, fishing, whitewater rafting and surfing. These areas include lakes, coastal waters, water springs and pools.

2. ***Briefly describe the important roles that water plays in the human body***

The adult human body is made up of approximatly 70 percent water, a loss of just two percent can result in dangerous signs of dehydration including dizziness and cognitive compromise. Water has many important funtions in the human body including:

- The transportation of nutrients in the bloodstream
- Elimination of wastes and toxins via urination and perspiration
- The functioning of major organs
- Regulation of core body temperature
- Aiding in the digestion of foods

Additionaly, clean water plays a key role in the prevention of disease through hygiene practices including frequent washing of hands and body.

3. ***List the types of people who are most vulnerable to waterborne diseases, explain your answers why and how to overcome the disease***

Those most vulnerable to waterborne disease include women, children, elderly, the disabled and immuno-compromised individuals. Other factors affecting vulnerable populations include geographical location (rural/urban, distance from water supply), socioeconomic status (ability to afford water), political environment (war/peace, safe access, security), natural environment (quality of water sources, contaminants), population use of latrines (affects local water sources), and social supports (assistance to vulnerable/disabled).

Overcoming disease associated with waterbourne diseases relies on the coordination of all stakeholders including residents, local, state, and national governments and organisations. Essentially the focus is to enable all individuals to have access to a minimum amount of clean water for daily use. Clean water is defined as clear water free of contaminants, colour, odour and taste. The water should be closely accessible, reliable, and affordable.

The minimum amount of water per person varies depending on location and cultural practices. The minimum amount should enable an individual to drink and cook with, clean themselves, their food, clothing, and living environment.

4. ***Suppose that inhabitants of a village obtain water from a spring. What advice would you give to the users about the prevention of contaminants entering the spring?***

1. Ensure pit latrines/areas of defecation are located at least 30 meters from the spring and if on a sloping ground defecation points must be lower than the water source
2. Protect the watersource from animals by constructing a stock-froof fence
3. Protect the spring from surface run-off by constructing a deep diversion ditch above and around the spring, ensure it is deep enough to protect from heavy rainstorms
4. Ideally construct a ‘spring box’ constructed of brick, masonry or concrete, directing water flow into a pipe or cistern. Ensure a watertight cover with lock.

5. ***The following are pollution sources. Give two specific pollutants for each source:***

   a) ***A residential area***

      1. Litter
      2. Detergents

   b) ***A metal plating plant***

      1. Cyanide
      2. Acids

   c) ***Agricultural activites***

      1. Pesticides
      2. Fertilisers

   d) ***An uncontrolled landfill site***

      1. Lechate
      2. Lead

   e) ***Urban surface water run-off***

      1. Hydrocarbons
      2. Zinc

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