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Objective: Dedicated and knowledgeable professional with a passion for water science and sustainability. Seeking a career in the field of water management to contribute to the efficient and responsible use of water resources while raising awareness about the importance of water molecules, especially hydrogen, in various applications.

Education:

LGCSE

Relevant Courses:

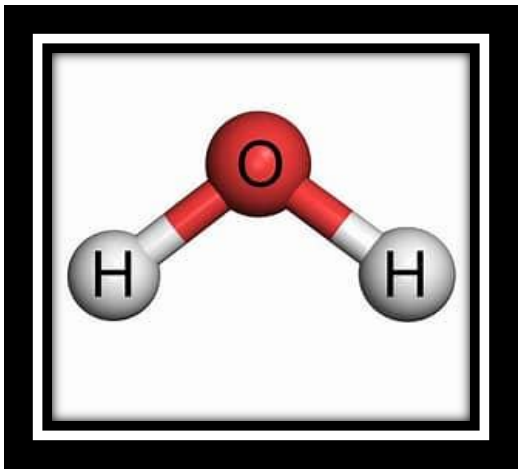
- Hydrology and Water Resources
- Environmental Chemistry
- Water Quality and Analysis
- Sustainable Water Management
- Water is life

Skills:

- Water Management:
- Proficient in water resource management and conservation.
- Knowledge of water treatment and distribution systems.
- Familiarity with water policy and regulations.
- Hydrogen Applications:
- Understanding of the importance of hydrogen in various industries.
- Knowledge of hydrogen production methods.
- Awareness of hydrogen fuel cell technology.

The Versatile Water Molecule

- Water is a simple yet amazing molecule that makes life possible on Earth. It consists of two hydrogen atoms and one oxygen atom, forming **H2O**.

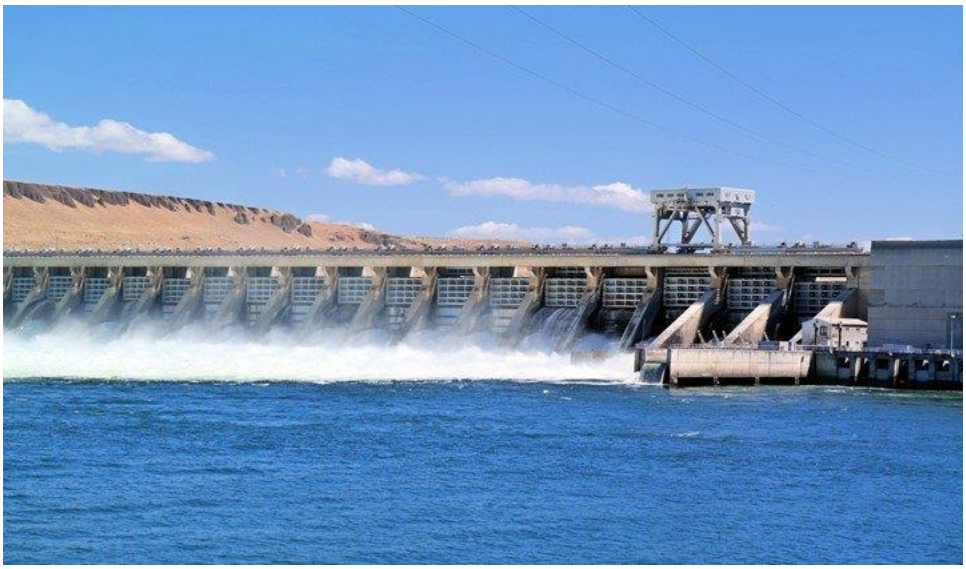


Water uses

1. Cooking

- Water has dissolving power that makes it vital in cooking. Soft water is preferred to hard water because it has higher solvent power. This is because hard water has already mixed in materials hence dissolves less in flavors and food substances. Soft water cooks tender meat, dried beans, cereals, and peas. The addition of soda in tough food assists in softening. Moreover, water extracts flavors when making tea, coffee, and soups.

Hydrogen use



. Hydroelectric power

People used water in ancient times; modern people used it to produce electricity. Hydroelectric is renewable energy which is used in water flowing in rivers or stored in dams to create electricity. Falling water is made to rotate turbine blades that spin generators, which changes the mechanical energy of turbines into electrical energy. Hydropower is known to be an important component of producing electricity worldwide.

Importunes of Hydrogen extracted from water

- Production and applications of hydrogen

The most important industrial method for the production of hydrogen is the catalytic steam–hydrocarbon process, in which gaseous or vaporized hydrocarbons are treated with steam at high pressure over a nickel catalyst at 650°–950° C to produce carbon oxides and hydrogen: $C_nH_{2n+2} + nH_2O \rightarrow Nico + (2n + 1)H_2$; $C_nH_{2n+2} + 2nH_2O \rightarrow nCO_2 + (3n + 1)H_2$. The primary reaction products are processed further in various ways, depending on the desired application of the hydrogen. Another important process for hydrogen production is the noncatalytic partial oxidation of hydrocarbons under elevated pressures: $C_nH_{2n+2} + (n/2)\ O_2 \rightarrow Nico + (n + 1)\ H_2$. This process requires a feed system for delivering precise rates of fuel and oxygen, burners of

special design to give rapid mixing of the reactants, a refractory-lined reactor, and a cooling system to recover heat from the effluent gases. The latter process is exothermic (heat producing), in contrast to the endothermic (heat absorbing) steam–hydrocarbon process.

- In a third process, called the pressure catalytic partial oxidation method, the two preceding processes are combined to maintain the required reaction temperature without external heating of the catalyst bed. Superheated steam and hydrocarbons are mixed, preheated, and blended with heated oxygen in a diffuser at the top of the catalytic reactor. The oxygen reacts with the hydrocarbons in a space above the catalyst. The reactants then pass through a bed of nickel catalyst in which the steam–hydrocarbon reactions proceed almost to equilibrium.