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Commentary

The Importance of Coastal Water Quality and its Functions

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DESCRIPTION

Coastal waters are defined as water that extends one nautical mile from a baseline established by the land points where territorial waters are measured and has not been designated as transitional water. Coastal waters represent the interface between land and ocean. Due to the enormous advantages they offer in terms of the economy, society, and the environment, our oceans and seas are essential for sustainable development. Since the industrial revolution, human activities like overfishing, habitat destruction, and pollution have put the oceans and seas under a great deal of stress.

Additionally, the marine ecosystems are changing as a result of climate change, including rising sea temperatures and ocean acidification. Oceans, resources, and populations that depend on the oceans and seas will all suffer as a result of these ecological changes. Marine contamination is a global concern for both the developed and developing countries. Marine pollution is caused by a variety of factors, including rising agriculture and livestock production, population growth, and industrial and municipal garbage.

Some marine pollutants make their way into the marine environment where they can have a negative impact on aquatic animals, human health *via* the transmission of contaminants into the food chain, biodiversity and productivity, and the depletion of marine living resources. An increasing population will put more pressure on agricultural producers to enhance their productivity. Water quality is seriously threatened by agricultural sources of pollution, such as runoff from fertilizers and pesticides.

Furthermore, there is mounting scientific proof that ocean acidification and warming will have an effect on marine ecosystems and the health of the seas. The oceans' ability to support life and regulate their environment will be hampered by the changing chemistry of the oceans due to rising carbon dioxide concentrations. India's coastal regions are heavily inhabited, and 30% of the country's people depend on the abundant, exploitable marine and coastal resources.

However, due to population growth, settlements, the rapid development of industry, the construction of harbours and ports, and tourism-related activities in the coastal zone, the coastal waters are vulnerable to a high rate of pollution. Numerous commercial and recreational activities near the coast, as well as the disposal of municipal and industrial pollutants, seriously endanger human health as well as the marine biota and food chain.

The information produced by this initiative is likely the sole long-term record on the country's coastal water quality. An additional programme was developed in addition to the standard SWQM programme to comprehend the transport, dispersion, and quantification of pollutants in coastal waters and to predict the pollution level based on indicative water quality parameters like temperature, salinity, dissolved oxygen, biochemical oxygen demand, nutrients, and pathogenic bacteria.

The Marine Ecotoxicology programme is being used to investigate how harmful substances affect living things in order to develop pollution control strategies and legislative frameworks for the long-term preservation of ecosystems and ecosystem components. For priority substances like metals and organics, toxicology bioassay investigations are being carried out on marine creatures.

For the authorized best use classes of the country's coastal and marine waters, the data from the laboratory-based studies are utilized to derive the numerical seawater quality criteria known as "safe levels." Given that it contributes to a variety of environmental, economic, health, and aesthetic issues as well as other important worldwide difficulties facing the marine environment, marine debris or marine litter is now recognized as a problem on a global scale. Eight million tonnes of plastic garbage are thought to be dumped into the oceans annually.

The progressive growth in marine litter found in the ocean, on the sea bottom, and along the beach is creating a challenging situation due to the sluggish rate of decomposition of the majority of marine litter items, primarily plastics. The Marine Ecotoxicology programme is being used to investigate how harmful substances affect living things in order to develop

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