An explanatory system to imagine and explore drivers of surface water quality

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Introduction

Water, the elixir of life, plays a pivotal role in sustaining all forms of life on Earth. As the global population continues to rise and industrialization expands, the demand for water intensifies. However, the quality of water is often compromised due to various anthropogenic activities, posing significant threats to both human health and the environment. This article delves into the multifaceted dimensions of water quality, examining its importance, key indicators, challenges, and potential solutions. Water quality refers to the chemical, physical, biological, and radiological characteristics of water that determine its fitness for various uses. These uses can range from drinking and agriculture to industrial processes and recreational activities. Non-point source pollution, on the other hand, arises from diffuse sources like agricultural runoff and urban storm water, making it challenging to trace and control. Assessing water quality involves employing a range of methods and technologies to measure the various parameters discussed earlier. Collecting water samples from different points in a water body and analysing them in a laboratory is a fundamental method for assessing water quality. The samples are tested for physical, chemical, and biological parameters to determine their compliance with established standards [1,2]. Satellite and aerial imagery are used to monitor large water bodies and detect changes in water quality.

Description

Remote sensing technologies help identify algal blooms, sedimentation, and other visual indicators of pollution. Deploying sensors and monitoring equipment directly in water bodies allows real-time measurement of parameters like temperature, dissolved oxygen, and pH. This continuous monitoring provides valuable data for understanding dynamic changes in water quality. Assessing the health and diversity of aquatic organisms, such as macroinvertebrates and algae, serves as a bio indicator of water quality. The presence or absence of certain species can indicate pollution levels. Ensuring the availability of clean and safe drinking water is paramount for public health. Contaminated water can harbour pathogens, leading to waterborne diseases like cholera, dysentery, and giardiasis. Aquatic ecosystems are highly sensitive to changes in water quality. Pollution can disrupt the balance of ecosystems, harm aquatic flora and fauna, and lead to the decline of biodiversity. Agriculture heavily relies on water for irrigation. Poor water quality can affect soil health and crop yields, impacting food production and posing risks to human health through the consumption of contaminated crops [3,4]. Industries dependent on water for manufacturing processes may face increased costs and regulatory challenges if water quality is compromised.

Conclusion

Tourism, a significant economic sector in many regions, is also adversely affected by polluted water bodies. Access to clean water is integral to achieving sustainable development goals. Protecting water quality ensures the availability of this vital resource for current and future generations. Water quality is a critical aspect of environmental stewardship and sustainable development. As human activities continue to exert pressure on water resources, understanding, monitoring, and safeguarding water quality becomes imperative. Implementing effective water management practices, promoting sustainable land use, and investing in innovative technologies are essential steps toward ensuring clean water for all. The collective effort of individuals, communities, industries, and governments is crucial in preserving this precious resource and safeguarding the health of our planet and its inhabitants.

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Conflict of Interest

The author declares there is no conflict of interest in publishing this article.

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References

1. Tian Y, Jiang Y, Liu Q, et al. Using a water quality index to assess the water quality of the upper and middle streams of the Luanhe River, northern China. Sci Total Environ. 2019; 667:142-151.
2. Varol M, Karakaya G, Sunbul MR. Spatiotemporal variations, health risks, pollution status and possible sources of dissolved toxic metal(loid)s in the karasu river, Turkey. Environ Res. 2021; 202:111733.
3. Varol M, Tokatli C. Evaluation of the water quality of a highly polluted stream with water quality indices and health risk assessment methods. Chemosphere. 2023; 311(Pt 2):137096.
4. Deng S, Yan X, Zhu Q, et al. The utilization of reclaimed water: Possible risks arising from waterborne contaminants. Environ. Pollut. 2019; 254(Pt A):113020.