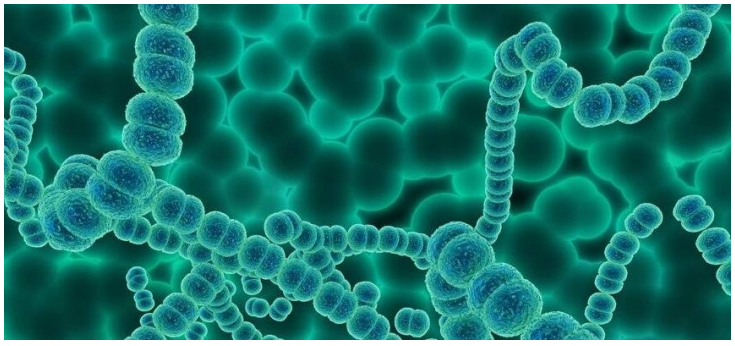
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IIT Guwahati pioneers eco-friendly solution for lead removal using microorganisms

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Direct or indirect consumption of water contaminated with lead can cause severe neurological, cardiovascular, kidney, and developmental problems



Researchers at the Indian Institute of Technology Guwahati (IIT-G) have developed a natural method to remove lead from contaminated water using cyanobacteria, microorganisms that are related to bacteria but are capable of photosynthesis. The developed method offers a sustainable and low-cost solution to one of the world's most persistent environmental threats.

The research team at IIT Guwahati has used bioremediation, a natural process in which microorganisms clean contaminated environments. These microorganisms naturally exist in soil and water and help in restoring ecological balance. To achieve this, the research team employed a light-dependent lead-bonding cyanobacterial species, '*Phormidium corium* NRMC-50". The team researched the different parts of the cyanobacterium to examine which of the components were the most efficient to absorb and remove the lead contaminants.

The researchers also demonstrated that cyanobacteria offer multiple environmental benefits such as absorbing pesticides, herbicides, hydrocarbons, synthetic dyes, and industrial chemicals, among others. The metals absorbed by the microorganisms can be recovered and converted into valuable products such as biochar, bioplastics, or biofuels.

Considering these organisms are self-replicating, low-cost, and require only sunlight, carbon dioxide, and minimal nutrients, they offer a sustainable alternative to synthetic adsorbents currently being used globally.

As the next step, the research team is targeting scaling the process from laboratory setup to a pilot-scale treatment system and testing it in real wastewater streams.