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Phycoremediation Process Used To Sequester Heavy Metals In Algae

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Abstract : Due to increased population and growing industries pollution load increasing in city, there is abundance large number of viable algae in environment is of great significance in phycology source of viable algae mostly comes by contamination of pollution in environment. The algae found in localized surfaces of Rajura in wardha basin from sasti to Ballarshah are transported via atmosphere turbulence. Industrialization and polluted atmosphere have potentially accelerated the heavy metals (HMs) in water and atmosphere. These HMs. Accumulated in water body of wardha river and such contaminated water when takes up by grazing animals such as cow cattle and then make their way into human food chains. Several technologies have been employed to take up HMs. Majority of these techniques are not economical and need stringent control and continuous monitoring. These technologies have low efficiency for removal of HMs. So algae offer an eco-friendly and sustainable alternative for remediation of HMs. From polluted water in this area. Macro and microalgae have advantageous for phycoremediation as compared to other approaches and are not economical . so there is argent need to refine the accumated algae in HMs.

Keywords : - Phycoremediation ,algae, water body, Heavy metals.

Introduction :-

Wardha water body located in Rajura, flows from Ballarpur to Rajura. This river is very much polluted due increased industrialization and coal mines pollution and cement factories from Gadchandur. All around polluted urbanization and industrialization results the wardha water body being polluted. Water quality play important role in distribution and abundance of algae growing in respected water body and also play important role in food chain of human being . Floods wind and anthropogenic activities i.e industrial effluents are some of ways that Heavy metals released into the environment. [1] precipitation causes HMs. In soil and air mixed in water bodies [5] Heavy metals are persistent. [2] they have negative effect on water bodies atmosphere. So strict measures taken to reduce the level of HMs. In wastewater below permitted limits before discharge in water bodies.

HMs. Are toxic to plants and over all living being HMs. Accumulated in plants and algae through water pollution increased lead (Pb) concentration decreased productivity. The uptake of cadmium (Cd), lead (Pb) manganese (Mn) can, result elevated rates of transpiration in plants. [3] Hms reduces oxygen in water and that may harm fish and other aquatic life. Leaching hydrolysis chemical extraction and precipitation areas few conventional techniques used for removal of hms from polluted sites. IT REQUIRES constant monitoring so bioremediation is suggested as an environmentally friendly substitute for the successful removal of Hms from polluted sites.

Algae are non-vascular plant that range in size from single celled or colonial microalgae such as diatoms Bioremediation by algae called phycoremediation has emerged viable method for removing Hms, wastewater phytoremediation has emerged as a viable method for removing Hms from wastewater [4] Algal biomass may be used over a period of years

[5]algae have potential to sequester diverse contaminants [6] algae are appropriate for aerobic and anaerobic effluent treatment units algae play a crucial role in aquatic ecosystem by consuming energy of food web for all equatic four algae are known to be excellent renewable energy source due to their fast rate og growth .

Material and Methods

Phycologist give the information about phytoplankton to take up Hms. From water body Heavy metals remove by microalgae occurs through bioaccumulation . and bioaccumulation. Bioscorption is a physic-chemical property that results in removal of HMS by covalent or ionic bonding [5] Algae minimize damage induced by through exclusion. The algae absorbed heavy metals is linked with their surface –to – volume ratios. Metal ions in aqueous solution bind to polyelectytes on algal cell wall. [5]

Heavy metal ions are transported across cell membrances through passive and active transport system and accumulate inside the cells. Metal binds on extra cellular and also binds to intra cellular i.e. physical adsorption ion exchanges have been employed by algae to toxicity by HMS. These method transport toxic metals into less or non-toxic forms

Algae perform detoxification of metal in various ways like binding to a particular intracellular organelle and also particular cellular components i.e polyphosphate vacuoles transported [4]

Precipitation in sulfide phosphate or carbonate reduces the heavy metals toxicity on living algae the algae (ladophora glomerata remove Pb, Cd, Ni, Cr.

Discussion:- HMs are toxic to all plants and animals and overall ecosystem (14). Particularly in roots HMs, accumulete (--) and enter the food chain, the increased concentration in of lead (Pb) in soil are wits the decrease productivity of ecosystem and soil. of plant develop dark green leaves and also seen the decreased foliage increased concentration of chromium (Cr) cadmium (Cd) lead (Pd) manganese (Mn) results on the rate of transpiration

Conclusions

For study of Heavy metals and pollutants on growth of aquatic flora and fauna and as a result human being through food web it is necessary to became this fact serious concern. Because toxicity towards human health and all biota. For the removal of toxicity several species of algae have been identified. For removal of detoxification of HMs. Removal of heavy metals can be carried out by bioaccumulation and biosorption .

Micro algae having several process for sequestering heavy metal ions and are therefore are biosorbents. Algae are good potential and used for heavy metal accumulation. But they have some limitations like low biomass and sensitivity towards high concentration of heavy metals. These problems may be solved by enhancing the biomass production so it is critical to consider variety of microalgae remediation methods are acceptable alternatives for healthier environment.

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