

## Mycorrhizosphere: An ecological remediation unit

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Rhizosphere region in the soil is influenced by the presence of plant roots. This influence may be associated with physical change in the area such as compaction or with the deposition of root desired material into the rhizosphere. Rhizosphere is capable of supporting a greater number of microorganisms than bulk, nonvegetated soil. Plants stimulate the growth of microorganisms in the areas around their roots through the release of natural substances. Rhizosphere deposition includes; low molecular weight compounds- sugars, fatty acids, organic acids and synthetic compounds; whereas high molecular weight compounds contain polysaccharides and polygalactic acids. Rhizosphere is a symbiotic association of bacteria, fungi and actinomycetes along the root zone of the plant. Rhizosphere bioremediation is a natural process of degrading xenobiotics which can be enhanced by supplying nutrients and providing

suitable environmental conditions. Rhizosphere bioremediation is also known as phytostimulation or plant assisted bioremediation. Mycorrhizosphere increases soil organic carbon, bacteria and mycorrhizal fungi all factors that encourage degradation of organic contaminants in soil. Plants enzymes dehydrogenase, nitroreductase, peroxidase, lactase and nitrilase as well as microbial enzymes in mycorrhizosphere have made effective biodegradation of complex organic compounds. The present study deals with remediation of polycyclic hydrocarbon in particular anthracene in mycorrhizospheric soil. The research findings show that there is rapid degradation of organic compound under the influence of green plant-grasses with fibrous roots in mycorrhizosphere. Mycorrhizosphere- an ecological remediation unit would be beneficial to decontaminate the xenobiotics to clean up the environment.

### Biography

**Dr. M. H. Fulekar** is a Professor in Environmental Biotechnology in University Department of Life Sciences, University of Mumbai. He was Head, University Department of Life Sciences, University of Mumbai (2005-2008). Dr Fulekar is a Member of the Academic Council and Chairman Adhoc-Board of Studies-Life Sciences, University of Mumbai. He is also Chairman Adhoc-Board of Studies-Environmental Sciences, Nagpur University. He has nominated as Expert in Various Academic/Scientific Bodies in India and abroad. He has had an international assignment on industrial hygiene / chemical safety in Australia, Bangkok and Singapore. He has in his credit 150 numbers of research papers and articles published in international and national journals of repute. He is author of Books: Environmental Biotechnology (Oxford & IBH), Chemical Safety and Industrial Hygiene (IK International), Dictionary of Biotechnology (IK International) and Bioinformatics: Application in Life & Environmental Sciences (Springer publishers), Nanotechnology- Its Importance and application (IK International), Environmental Biotechnology (CRC Press & Science Publisher, USA), Bioremediation Technology- Recent Advances (Springer Publication). He has achieved the inclusion of his Biography in "The Marquis Who's Who" in Science and Engineering USA in 1998; and "2000 outstanding Scientist of the 20<sup>th</sup> Century" in 2000, International Biographical Centre, Cambridge, England. He is also a member of New York Academy of Sciences, USA. He is well known nationally and internationally for his work on environment sciences / environmental biotechnology.