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Redefining approaches to waste water characterization and treatment processes based on sector specific differentiation

Srinivas Krishnaswamy

BITS - Pilani, K. K. Birla Goa campus, India

Abstract

The nature of human activities have drastically changed over the last few decades from a kind of pastoral local set of environmentally optimized activities to global environmentally degrading activities in areas such as mining, tourism, industry, agriculture, power plants etc. in such massive scales that nature is unable to cope with the huge environmental changes that are being brought about. Day by day the composition of waste water is changing drastically in each sector of human activity and industry. However always practiced in most cases is a uniform approach to characterizing and treating these diverse waste waters. So much so that, this has been ritualized. There has been little realization that with rapidly changing technologies employed in every facet of life, there is a need for paradigm shift in the approach to waste water characterization and treatment. The present uniform approach has resulted in some ironical situations for e.g. the use of aerobic treatment with microbes for antibiotic and pesticide waste waters. This paper presents a strong case for adopting a different approach to waste water characterization and treatment processes for waste waters from different sectors by employing newer and more powerful sector-specific analytical procedures, equipment and protocols. This includes membrane assisted processes in both aerobic and anaerobic treatment and also a plethora of chemical and biochemical technologies. A brief idea of the ways to implement this sector-wise treatment is also presented. This involves creative strategies in mobilizing academic institutions, industrial and R&D organizations and environmental agencies. Preliminary ideas for funding for such strategies are also discussed.

Biography

Srinivas Krishnaswamy is presently an Associate Professor and Head of Department of Chemical Engineering at BITS Pilani K K Birla Goa campus. He obtained his Doctoral Degree from the University of London in 2004 followed by completion of post-doctoral research at the University of Sheffield. Prior to the start of his PhD in 2000, he has worked as a Scientific Officer at Bhabha Atomic Research Centre from 1993 – 1999. His main focus in research involves addressing challenges posed in developing practical cost effective, energy efficient and environment friendly systems from a commercialization point of view, thereby attempting to bridge the gap between know-why and know-how. In this context he has been involved in projects funded to the tune of Rs. 5.25 crore till date. He is also an Associate member of Institute of Chemical Engineers, United Kingdom.