

‘An overlooked obstacle today, makes you overlook your proceeds tomorrow’

- Mr. V.S. Ravindran, CEO, Caprienzymes & Mr. J. Girish Krishnan, Biotechnologist

Negligence of small issues is the catalyst for a subsequent larger problem. This is largely due to the rapid technological development that puts all the industries into a stiff competition and as a result of which the complete focus is only on the mainstream production and the waste management falls between the cracks.

Chromium remains a vitally important chemical in the global production of leather with at least 80% of global leather production being tanned with chromium III salts. It is a highly effective tanning agent producing leather with a flexible range of properties making it suitable for many end uses. But this chromium when released out as an effluent is a serious threat to the soil and the terrestrial life.

Dyes are the main raw materials in the textile industry. Approximately 25% of chemicals manufactured globally are applied in textile industry. More than 550 types from 9 groups of dyes and over 3000 chemicals from 11 groups of associates are banned to be used in textile products by professional institutes evaluating eco-labels, or some national legislation. Yet these chemicals are utilized in a large scale in most of the developed as well as developing countries.

Water is an integral part of operations within the paper and pulp industries and on an average, these industries release tens of millions of wastewater per day. This waste water is fortified with Volatile Organic Compounds (VOCs) such as terpenes, alcohols, phenols, chloroform, surfactants; dyes and pigments; and alkaline solutions.

Similarly, detergent manufacturers also contribute to the water pollution by letting out their sewage outfalls and cause foaming in the rivers and lakes. This foam reduces the availability of oxygen at the air-water interface leading to aesthetic problems.

As per the information provided by the Central Pollution Control Board (CPCB), the amount of hazardous waste generated in the country as of 2013 is about 7.90 million tonne per annum. Maharashtra (22.84%), Gujarat (22.68%) and Andhra Pradesh (13.75%) are the top three hazardous waste generating states followed by Rajasthan, Tamil Nadu, Madhya Pradesh and Chhattisgarh. These seven states together generate about 82% of the country's total hazardous waste.

Even as pollution control norms are getting stringent and the noose is tightening around those who flout the rules, there has been no significant development in waste management or effluent treatment in the country. The new European chemicals regulation - Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) is affecting every product (other than natural product) being exported to EU above a certain limit.

Enroll the solution; control the pollution:

As we say prevention is better than cure, it is always better to design our process mechanisms in such a way that we do not worry about the effluent treatment in the later stage. Though many techniques and

enzymes have been discovered to breakdown the complex waste into simpler compounds for easy disposal, obtaining an alternative for chemicals would be the perfect solution. This will in turn ensure that there is no risk of any hazardous effluents being released into the environment. Some of these effluents have the potential to be utilized for various other purposes or even recycled and used for the same purpose. In fact, many of the Brazilian tanneries have started to use the recycled water for successive tanning process in order to reduce the amount of waste water discharged.

M/s Caprienzymes thrives on this eco-friendly concept with a broader set of goals. Our primary focus is to stay green and help others cultivate green. We cater concentrated as well as formulated enzymes for various industries like leather, textile, poultry and dietary supplements. All these enzymes have different functions in different processes based on the industry. Our second target is to construct a sophisticated training institute for the engineering graduates to get hands on experience on different process in an enzyme industry and see to that the technocrat emerges out as a skilful human capital for the nation.

Over the past few years, a lot of awareness has been spread on the use of enzymes in leather industry and almost every step in leather production has been overtaken by enzymes. Apart from an average of 13% growth per annum in the bio industrial sector since 2003, a lot of tanners in India are still away from the knowledge of the use of enzymes in their processes or neglect to change their process mechanisms just for the sake of the environment. Such kind of an approach not only hurts the health of the citizens but also poisons the same attitude of 'negligence' into the next generation.

Together, we can change the environment green!

Tales of awareness campaigns, public speeches and pamphlet teachings are dime a dozen. Such approaches are effective only to the ones in the biotech field and do not reach the producers. This was proved recently in Tamil Nadu, when around 40 tanneries were forced to close temporarily in Ambur due to discharge of hazardous waste water into the milieu. Also the textile industries in south are under constant surveillance by the TNPCB and public. To overcome such hurdles, it is necessary for the tanners to enforce changes to their processes with enzymes for the benefit of the complete leather community.

With a constant growth rate of around 23% per annum in the Biotech industries in India over the last ten years and the amount of funds and schemes raised by our government for the development of Bio sector, the bio-investors should not have any reason to rethink about investing in this field with a green mind set. They should come out with novel strategies and techniques to see to that no hazardous effluent comes out of their industry and most importantly, they must design mechanisms in such a way that the wastes are been reused by themselves for other supplementary productions. Moreover, a beautiful platform has been laid for the young biotech graduates to implement all their ideas and fulfil their desires in this field. All that they must keep in mind is 'Knowledge is wealth' and understand that creating an eco-friendly environment is the only ultimate and long-lasting solution for a healthy nation.