

Newreka participates in the 16th Annual Green Chemistry & Engineering Conference in Washington DC and is slated to present in the 'Waste Valorization: Putting Waste to Work session'.

Zero discharge process for synthesizing dyes intermediates by “Recycle @ Source”

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A dye is a chemical having sodium (less often-ammonium) salt of a sulfonic, carboxylic or phenol organic acid. Due to the gradual abandonment of manufacturing of toxic dye intermediates in developed countries, India has become one of the hubs of dye intermediate manufacturing. It is mainly manufactured by small and medium-sized enterprises (SMEs) with a production capacity of between 10 and 100 tonnes per month. Due to the usage of high-strength acids and alkalis in the manufacturing process of these dye intermediates, the combined wastewater stream is contaminated with high chloride and sulphate content. In addition, the presence of toxic naphthalene-based dye intermediates in wastewater makes it non-biodegradable. In order to meet existing terminal standards, these industries have to install capital-intensive and more sophisticated treatment systems with heavy recurring costs. Therefore, the feasible alternative is to implement pollution prevention measures using “Recycle @ Source”, with the objective of not only optimizing chemical usage but also virtually eliminating the pollution load to subsequent wastewater treatment systems. Recycle @ Source is a simple method to recycle all the effluent streams of process back to its source without contaminating or degrading product quality. By applying this approach in manufacturing of any chemical product, triple bottom line of Planet, Profit and People can be served. H-acid (1-amino, 8-naphthol, 3,6-disulfonic acid) & MPDSA (Meta Phenylene Diamine 4-Sulfonic Acid) are two largest dye intermediates used in the manufacture of acid, reactive and direct dyes. Both of these intermediate generate liquid effluent of e-factor 50 - 75 which is highly acidic in nature. By applying Recycle @ Source technology, the effluent is recycled more than 25 times, thus reducing effluent load almost by 95 % and giving consistent quality and theoretical yield.