Sodium Formate Rich Waste Liquor from Penta Erytheretol Manufacture – Suitability of this Waste in Leather Making after Suitable Modification – An Industrial Success in terms of Economic and Environmental Benefits

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Abstract: Pentaerythritol is a useful industrial product and Sodium formate is a by product in Pentaerythritol manufacture. Nearly 50% of sodium formate is recovered during vacuum crystallization process however; recovery of rest of it was not economically viable and hence sent to effluent treatment without any utilization. This practice has not only led to loss of revenue in wasting sodium formate containing liquor, additionally it has led to pollution load in the effluent treatment plant. In this work sodium formate rich waste liquor has been recovered from a large scale pentaerythritol manufacturer and evaluated for its suitability in leather making. It was found that though it is suitable it had formaldehyde which is undesirable in leather making so subsequently treated for removal of formaldehyde and subsequently used in basification and neutralization steps along with sodium bicarbonate in making full chrome goat upper and cow upper leather. The leathers produced using waste sodium formate liquor had no adverse effect in dyeing or in strength properties. Presently the Large scale Pentaerythritol manufacturer is making an additional revenue of US$ 60,000 from this waste material. The pollution load of this industry was also brought down drastically due to this initiative. This study clearly shows that a waste of an industry could be used in another industry with suitable modification of the industrial waste thereby leading to economic and environment benefits.

Key words: by-product; pentaerythritol; sodium formate