

A REVIEW:

Treatment and disposal of distillery spentwash

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The spentwash is coloured, highly acidic with very offensive in odor, which poses serious environmental problems. Control of pollution arising from distillery spentwash is done by a variety of methods, consisting of biogas generation and aeration, composting, evaporation and incineration, ferti-irrigation. Pollution prevention focuses on preventing the generation of wastes, it is achieved by using physical, chemical and biological methods either alone or in combination. While, waste minimization refers to reducing the volume, water recycling and reuse, process modifications and the byproduct recovery as a fall out of manufacturing process creates ample scope for revenue generation thereby offsetting the costs substantially.

The paper reviews the status and appropriate treatment alternatives for disposal of the distillery wastewater.

The world's total production of alcohol from cane molasses is more than 13 million m³/annum. The aqueous distillery effluent stream known as spentwash is a dark brown highly organic effluent and is approximately 12-15 times by volume of the produce alcohol. It is one of the most complex, troublesome and strongest organic industrial effluents, having extremely high COD and BOD values. Because of the high concentration of organic load, distillery spentwash is a potential source of renewable energy.

Till the mid 1980s, Indian distilleries used to adapt an open anaerobic lagoon treatment system for treating the spentwash, before it discharges. The primitive treatment method removed only 60 to 70% of organic load present in the spentwash, which was converted into bio-gas predominantly containing methane. Methane, until it is recovered and utilized is a potent green house gas with many untold ecological damages that go with it. Many alternate methodologies were conceived and practiced, keeping the environmental and industrial sustainability on

the main agenda (Rao, 2008).

On account of the need for earliest possible implementation of the environmental standard prescribed by Central Pollution Control Board (CPCB), the topic of pollution control in ethanol distilleries has gained paramount importance. Pollution arising from alcohol distilleries has been recognized as one of the most difficult problems to be solved to the entire satisfaction of the Pollution Control Act. Irrespective of removal of large quantities of BOD and COD from the spentwash by a variety of methods, the caramels contained in the same on account of their high colour value defeat the valid claims of any process of treatment. Caramels are formed during the sugar manufacture and are carried over into molasses. Irrespective of microbial action during fermentation, they still get carried over into spentwash without any change. So long as any passer by can see a dark colour to whatever way treated spentwash, he cannot accept the treatment to be practically valid. This notorious colour shall continue to play havoc with the fields and water bodies. Thus, removal of colour is the key to any sound pollution control process for spentwash.

Current status of distillery industries in India:

The 295 distilleries in India produce 2.7 billion liters of alcohol and generating 40 billion liters of wastewater annually. The enormous distillery wastewater has potential to produce 1100 million cubic meters of biogas. The population equivalent of distillery wastewater based on BOD has been reported to be as high as 6.2 billion which means that contribution of distillery waste in India to organic pollution is approximately seven times more than the entire Indian population. The wastewater from distilleries, major portion of which is spent wash, is nearly 15 times the total alcohol production. This massive quantity, approximately 40 billion liters of effluent, if

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