"COMPARATIVE STUDY OF COLOUR REMOVAL AND TREATMENT OF COFFEE EFFLUENT USING BAGASSE FLY ASH AND LATERITE AS A FILTERING MEDIA"

PROJECT REPORT

(Approved by Karnataka State Council of Science and Technology, Bangalore)

SUBMITTED BY

ANUSHA RAMESH
(4AI05EV001)
DEEPIKA B.V
(4AI05EV004)

DEEPTHI VINOD
(4AI05EV005)
JAFFER.KHAN PATHAN
(4AI06EV400)

In partial fulfillment of the requirements for the award of the Degree of

"Bachelor of Engineering"
In
ENVIRONMENTAL ENGINEERING

UNDER THE GUIDANCE OF

Asst Prof. D.L LAKSHMI NARASIMHA, M.Tech
(Assistant Professor, Dept of Env Engg...)

DEPARTMENT OF
ENVIRONMENTAL ENGINEERING

ADICHUNCHANAGIRI INSTITUTE OF TECHNOLOGY
(Affiliated to Visvesvaraya Technological University, Belgaum)

CHIKMAGALUR-577102
KARNATAKA STATE

2008-2009

ABSTRACT

Coffee is major commercial crop of our country and Karnataka is one of the leading producers. The ripe coffee fruits have to be processed to obtain quality coffee beans. Coffee processing is carried out by wet method and dry method. Wet method comprises of pulping, fermentation and washing. The extensive pulping operation produces a colored, odorous effluent containing biodegradable dissolved and suspended organic solids which demand proper treatment.

The trend that is widely followed by the coffee growers is to treat the coffee effluent using anaerobic methods. Anaerobic methods create unaesthetic conditions with foul smell and brown colored liquid waste. In view of these problems, a pilot plant study has been made to treat coffee effluent effectively by 'filtration technique' using bagasse fly ash (a sugar industry waste) and laterite bricks.

A comparative study for treating the coffee effluent by filtration was carried out from January to March mid-week. Samples were collected, preserved and analyzed in the laboratory as per the procedure laid down in the standard methods.

A down flow filter with a media depth of 24 cm and 30 cm has been used. Filtration studies are done using fly ash and laterite as filtering media separately as well as in combination of both as filtering media were used. Based on the study it was found that Bagasse Fly Ash posses excellent properties in treating the coffee effluent. A depth of 30cm at a flow rate 0.9L/min with Bagasse Fly Ash as filtering media a BOD removal of 90%, COD removal of 96%, total solids removal 93%, suspended solids removal 98%, dissolved solids removal is 83% is achieved. Although the BOD removal is 96% in order to meet the ISI discharge limits recycling of the treated effluent through the unit is to be done. The cost of construction of the unit to treat a flow of 70,000L/day works out to be around Rs7200/- which is economical and quite feasible.