



ODOUR AND COLOUR REDUCTION IN THE LEACHATE GENERATED FROM THE LAND FILLING SITE AT KIRINDIWELA

Jayasundara R.S.C.1, Wijetunge S.1, Malwana C.2 and Wickramasinghe W.M.S.1

1 Department of Agricultural Engineering, Faculty of Agriculture, University of
Ruhuna, Matara, Sri Lanka

2 Central Environmental Authority, Eastern Province, Sri Lanka srilani

.wick@gmail.com

A strong leachate is produced in the sanitary land fill at Kirindiwela due to physiochemical and biological decomposition of solid waste and the percolation of rainwater through the waste layers. The site also operates a treatment facility to treat the leachate drained from the landfill before it is disposed out of the site. However, odour and turbidity reduction is low in the treatment facility. The objective of this study was to reduce the odour, turbidity and diluted substances in the treated leachate using locally available absorbents. Four different filter media were used in the study *viz.* acacia wood charcoal, boiler ash, clay and coconut shell charcoal. Completely randomized design with three replicates was used to evaluate filtering of different filter media. Treated leachate was filled into a common tank with the capacity of 200 L. Then it was transferred, under gravity, through four separate one inch diameter pipes and passed in to filter containers (four inches diameter, two feet height) with different filter media, against gravity. Three different leachate flow rates of 4.17Lh⁻¹, 2.08Lh⁻¹ and 1.67Lh⁻¹ were used initially and the 1.67Lh⁻¹ flow rate was selected for further studies due to its efficiency in the reduction of EC, pH and turbidity. Then EC, pH and turbidity were measured and a sensory evaluation was done for every 100 L filtration through each filter media. An EC level of 4 mS/cm was considered as the tolerance level to identify the saturation of filter media. Data was collected until each filter media reached the tolerance level. Acacia wood charcoal filter media reduced the colour significantly compared with other filter media. However, odour reduction was higher in the filters having coconut shell charcoal. The odour reduction by Acacia wood charcoal filter was slightly lower than coconut shell charcoal filters. Further, Acacia wood charcoal filter media recorded the lowest EC and turbidity value throughout the research. Therefore, it can be concluded that the Acacia wood charcoal filters can be used for the reduction of colour and odour of treated leachate in the landfill site at Kirindiwela.

Keywords: *leachate, filter media, flow rate, odour, colour*