

## ABSTRACT

Solid waste management (SWM) is an integral part of the urban environment. It is important to plan the urban infrastructure to ensure a safe and healthy human environment while considering the promotion of sustainable economic growth. The disposal of the solid waste is the last operation in an integrated solid waste management system. Solid waste management is in the interest of the public at large. It is an exclusive service. Also it's non rivaled service. Municipal solid waste disposal has been an important issue for humankind, since waste is always generated as a result of human activities. Land filling is considered to be the most common municipal solid waste management strategy, since it is the simplest and the most economical method in most parts of the world.

This study focused on quantifying and characterizing leachate emissions from the selected dumpsites in the Colombo District and to determine benchmark values of leachate emissions from old and new dumpsites. Leachate samples from Senanayaka, Buthgama, Maharagama and Karadeyana dumpsites were collected and analyzed for pH, electrical conductivity, total dissolved solids, chemical oxygen demand, biochemical oxygen demand, phosphate, calcium, copper, nickel, lead, total suspended solid, chromium, and total nitrogen.

A validated monitoring and assessment procedures are being utilized and developed in many parts of the world and notably in North America. Thus, an effort was made to quantify leachate emissions from various landfill sites in the District of Colombo and the Hydrologic Evaluation of Landfill Performance (HELP) model was used to predict leachate generations in the dumpsites. It is the well configured and very "user friendly" model. Remarkably, it requires only daily climatologic data and wastes plus soil characteristics.

However, the literature review indicates that in semi-arid tropics and tropical climates, this model may not be applicable and validation is required. One of the ways

is to confirm by comparing the data from lysimeters with that of the 'model' and applying these values to known dumpsites. Not all of the dumpsites can be monitored accurately due to limitations in scientific methodology, resources and time. However, few of the dumpsites were monitored and they could be representative locations for the entire district. As expected low emissions were from older dumpsites and the heavy metal concentrations were considerable in the new ones, particularly from the dumpsite at Karadeyanna. It is very likely that heavy metal contaminations were from the surrounding industries. The impact of the scattered dumpsites in the Colombo District on the environment is considerable with BOD and COD values reaching 2500mg/l and 30,000mg/l respectively in the periphery of these dumps. Therefore, mining and rehabilitating these dumpsites should be undertaken as a priority measure to protect the health of the city dwellers and environment.