

Variations in rainwater quality from roof catchments

ABSTRACT

The quality of rainwater from a tile and a galvanized-iron type roof catchments were analysed over a period of 5 months. Examination of staggered 1 litre samples collected during a rainfall event showed that the concentration of various pollutants were high in the first litre but decreased in subsequent samples with few exceptions. Faecal coliform and total coliform counts ranged from 8613 (tile roof) and 468 (iron roof) to 41675 (tile roof) and 25663 (iron roof) colonies per 100 ml, respectively. However, no faecal coliforms were detected in the fourth and fifth litre samples from both roofs. The pH of rainwater collected from the open was acidic but increased slightly after falling on the roofs. The average zinc concentrations in the run-off from the galvanized-iron roof was about 5-fold higher compared to the tile roof, indicating leaching action but was well below the WHO limits for drinking water quality. Lead concentrations remained consistently high in all samples collected and exceeded the WHO guidelines by a factor of 3.5. For the roof area studied, a 5-litre flush volume would be the minimum to safeguard against microbiological contamination but the high metals content in the water indicate the need for some form of treatment. Rainfall intensity and the number of dry days preceding a rainfall event significantly affects the quality of run-off water from the catchment systems.

Keyword: Rainwater quality; Water microbiology; Coliforms; Rainwater harvesting