

THE EFFECTS OF MULTIPLE WATER USE ON WATER QUALITY OF THE ASHAIMAN IRRIGATION DAM

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ABSTRACT

Research has indicated that, irrigation schemes which are established purposely for irrigation of crops turn out to be a multipurpose facility rather than their intended purpose. Some of these uses turn to conflict with the primary purpose there by, sometimes reducing the quality and/ or quantity of the water downstream. Studies in Kumasi and Accra on the quality of urban and peri-urban waters used for irrigation of vegetables revealed that these urban waters were highly polluted especially with faecal coliforms. The main objective of this study was therefore to examine the various physical and human activities that took place along the catchment of the Ashaiman dam and to assess their impact on the quality of the water that is used for irrigation of crops. This involved identifying the range of human and socioeconomic activities and their implications on the health of the environment and the people within the catchment area. Studies were also carried out on the physico-chemical and bacteriological properties of the water body at various stages of the water flow (upstream, midstream and downstream) and determination of the suitability of the water for irrigation of vegetables that are likely to be eaten fresh at the project site. Results indicated the major human activities within the catchment area to be primary activities which have effect on the environment. These activities include sand winning, farming, fishing and firewood harvesting. Other human activities which were found to have effect on the environment are dumping of domestic waste both liquid and solid into and /or near the water body and defecating in and / or near the water body. The results revealed that the water quality in terms of most of the cations and anions is conducive for agricultural purposes (both crop and animal production). The SAR also indicated that the water can be use for irrigation purposes without infiltration problems (salinization) with the exception of the downstream which is slightly saline but can be moderately used for irrigation purposes. The results showed that pollution was high at the downstream as a result of the farming activities and other unsanitary conditions within the irrigation project. One major contribution to pollution at the downstream is the backflow of domestic waste water from Ashaiman Township into the irrigation drains during heavy rains. Sediment loads was high especially at the upstream. This could be due to the various

activities such as farming, grazing, and sand wining taking place there. High loads of sediments concentration could cause clogging when drip irrigation is employed. Faecal cloiform levels and number of helminth count were high in both the water (at all the various stages of flow) and lettuce above WHO recommended values which could be risky for human consumption.

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