

**Environmental and Health Hazards Of Hospital Effluent and Their Mitigation - A Case Study of Eastern Regional Hospital, Koforidua**

**OSEI-MENSAH JAMES**

**2012**

**ABSTRACT**

This study primarily investigated the environmental and health hazards of effluent discharged by the Eastern Regional Hospital, Koforidua. Laboratory analysis and questionnaire were the major tools used for data collection. Laboratory analysis comprised of bacteriological analysis, chemical test and spectrometry. Samples analyzed included effluent discharged by the hospital, water and sediment of the stream that receives the effluent, well water in the receiving environment (community), the mechanized borehole used by the hospital and control well water from a different community. Physico-chemical parameters of the effluent measured were generally within the EPA levels except turbidity and phosphate concentration. With the exception of phosphate all the other physico-chemical parameters of the well water in the receiving environment were higher than the control values and WHO guidelines. The range of lead concentration (0.014 - 0.26mg/L) and mercury (0.012 - 0.066mg/L) in the effluent were higher than the maximum permissible level (0.1mg/L and 0.005mg/L respectively) set by EPA-Ghana. However, the mean concentration of cadmium (0.03mg/L) was within the EPA limit of 0.1mg/L. The bacteriological analysis centered on enumeration of total bacterial count, total coliform and faecal coliform in the hospital effluent, well water and stream water in the receiving environment. The average faecal coliform count in the effluent ( $2.2 \times 10^4$  cfu/100ml) was higher than the average for total coliform ( $1.82 \times 10^4$  cfu/100ml). These exceeded the EPA's standards for effluent (400cfu/100ml). Based on these findings, it could be said that the hospital is contributing significant amount of trace elements (Pb and Hg), total coliform and

faecal coliform into the environment/community. There is therefore the need to treat the hospital effluent before discharge to safeguard the health of the community.

Supervisors

Dr. R. K. Esena

Dr. F.K. Nyame