

**ENVIRONMENTAL MONITORING OF EFFLUENT FROM BARIMA FUEL SERVICE  
CENTRE (MALLAM – ACCRA) AND ENVIRONMENTAL AUDIT OF SOME FUEL SERVICE  
STATIONS IN ACCRA-TEMA METROPOLITAN AREAS OF GHANA**

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**ABSTRACT**

City authorities the world over are lamenting on the ever increasing liquid and solid waste management problems, and are in continuous search for inexpensive and easy solutions to these waste problems. Ghana, like many other developing countries, in its effort to controlling these problems enacted and an Act (Act 490) through Parliament in 1994, which charged the Environmental Protection Agency (EPA) to demand for Environmental Impact Assessment (EIA) on all developmental projects which are likely to impact significantly on the environment.

The operation of fuel service stations happens to be one such projects of concern. Since not much work has been done on the compliance to this Act, this study was designed to monitor a fuel service station to generate data on pollution levels. Subsequently an environmental audit was conducted on some seventy-five (75) fuel service stations made up of fifteen each from Mobil, Shell, Elf, Total and Goil oil companies to assess their compliance to the Act.

The study employed two methods i.e., laboratory analysis and questionnaire administration. The focus was on fuel service station managers and their attendants. The physical and laboratory analysis revealed that except for pH and nitrate concentration, all the parameters determined were well above the EPA permissible levels. The results showed that the surrounding of the station was polluted indicated by the elevated levels of Biochemical Oxygen Demand (BOD), Oil/Grease and low Dissolved Oxygen (DO) concentration. There was significant positive and negative correlation between some parameters, which indicated that the effluent from the Barima Service Station in Accra has contributed to the pollution of a stream at least within its environs. Other human activities also contribute.

The Environmental Audit of fuel service stations was scored in percentages. A lowest best performance score of 50 and a high of 100 were used. The study revealed that, all the fuel service stations (100%) of all the marketing companies (Mobil, Shell, Elf, Total and Goil) dispensed petrol and diesel. Total had the highest of 73.3% for kerosene and 33.3% for Shell being the lowest. Vehicle lubrication was 93.3%, 80%, 73.3%, 66.7% and 60% for Mobil, Shell, Elf, Goil and Total respectively. Sales of LPG filled cylinders, 73.3%, 73.3%, 60%, 40% and 20% for Mobil, Total, Elf, Shell and Goil respectively. Most of the enterprises audited had shopping marts and restaurants attached. They were 100%, 100%, 66.7%, 60% and 60% for Mobil, Shell, Elf, Total and Goil respectively.

Washing bay, which is fast becoming a prominent feature in fuel service station design was 46.7%, 40%, 33.3%, 33.3% and 20% for Shell, Mobil, Elf, Goil and Total.

Pollution control/minimization measures determined revealed the following mean percentage best performance of 47.73% to 45.17%. Traffic congestion and control showed mean best performance of 100% to 86.67%. Fire hazards management was 65.96% - 56.31%. Waste management was 100% for all companies. Occupational health and safety management, 99% - 94% and Public participation/perception of enterprise was 93.34% - 77.79%.

It is evident from the findings that stringent enforcement measures are needed from Environmental Protection Agency (EPA), which is the enforcement authority to control the effluent that operators of fuel service stations release into the environment. Further, adequate monitoring is required of EPA to determine problems that proponent of fuel service stations and the public encounter so that they are addressed to avoid operational conflicts.

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