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THE EFFECTS OF POOR WASTE MANAGEMENT IN THE OIL AND GAS INDUSTRIES: A CASE STUDY OF THE EMENE PETROLEUM DEPOT IN ENUGU STATE, NIGERIA

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***Abstract*: Waste generation during oil and gas operations in the Nigerian petroleum industry has created serious health and environmental pollution problems for the host communities in particular and the country at large. This research identified the various types of petroleum wastes and their sources, the effects of these waste products on the environment and the eco-system. Also the waste treatment and management practices in the oil and gas industries was examined. Most importantly, the best suitable and cost effective methods for handling these wastes products generated in the course of running oil and gas operations is made known for future reference.**

***Keywords:* Waste management, Hazardous, Liquefaction, Hydrocarbon, Pollution, Downstream, Proactive, Habitat.**

1. INTRODUCTION

The activities of the petroleum industry results in the generation and discharge of gaseous, liquid and solid waste materials into the environment. Babalola, M.A. (1995). While some of these wastes can have significant adverse effects on the environment, some have little impact and others are actually beneficial. Cadwell, L.K. (1972). In virtually all cases, the adverse effects can be minimized or eliminated through the implementation of proper waste management practices. The most important step in minimizing adverse environmental, health and social impact from pollution is for the oil and gas industry to take a proactive approach to managing waste and educating their workers on the harmful effects of poor waste management practices. Adegoke, S.O. (1990).

2. MATERIALS AND METHOD

***Research instrument*:**

Descriptive research method was used for the study. The method is used to describe systematically, a situation or area of interest factually and accurately. Isaac and Micheal, (1978). The design could be public opinion survey, status studies, and fact-finding surveys and so on. In this study, pure descriptive survey design was used in which the variables being studied for any sample are never compared for various strata of the sample, which in most cases are the dependent variables for the study. Survey design is the one in which a group of items were studied by collecting, analyzing and interpreting data from a few people considered to be representative of the study population. Adebayo W.O. (1995). The study utilizes a questionnaire as its instrument. The questionnaire was divided into three sections; A, B, and C. Each of the research

questions has between one and five statements or items to elicit information from the respondents to indicate their opinion on each item based on the five-point scale of strongly agreed (SA), agreed (A), disagreed (D), strongly disagreed(SD), and undecided (U).

Data collection procedure and analysis;

The researcher with the help of four assistants administered one thousand two hundred (1200) copies of the questionnaire. However 1097 questionnaire were retrieved and 97 of this number were found not to be useable. At the end, 1000 questionnaire were found to be usable which was found to be adequate for the analysis.

Frequencies, percentages, means and standard deviation were the statistics used to take decisions of various research questions. The use of means to answer research questions by accepting or rejecting a statement has been widely employed by many researchers as cited by Agba, P.C. (2000) and Akpan, C.A. (1995).

3. RESULTS AND DISCUSSION

The results of this study are shown in tables 1 and 2. In table 1, interestingly, poor refuse disposal was rated first while overcrowding/population and air pollution was rated second and third respectively. This finding is consistent with the work of Rim Rukeh and Ogeni, (2006).

Table 1: Environmental problems as perceived by respondents.

ENVIRONMENTAL PROBLEM	NUMBER OF RESPONDENTS	PERCENTAGE
Poor waste disposal	897	89.7%
Air pollution	772	77.2%
Overcrowding/population	798	79.8%
Noise pollution	593	59.3%
Poor urban housing	654	65.4%
Poor sewage disposal	431	43.1%
Poor drinking water	552	55.2%
Deforestation	19	1.9%
Climate model	145	14.5%
Flooding	406	40.6%
Erosion	322	32.2%
Water pollution	631	63.1%

Table 2: Factors militating against the level of efficiency of the petroleum depot in terms of waste management.

FACTORS	FREQUENCY	PERCENTAGE
Insufficient fund	870	87%
Inadequate trained personnel	263	26.3%
No financial sacrifices for environmental protection	371	37.1%
Lack of proper education by the people	434	43.4%
Poor equipment	792	79.2%
Negligence to duty	245	24.5%
Increasing population	626	62.6%
Lack of adequate awareness of the public on waste mgt.	531	53.1%
Lack of air pollution control devices by the oil & gas industries	385	38.5%
Poor enforcement of waste management regulations	450	45%
The peoples culture not to respect human dignity and decency	79	7.9%
Increased industrialization and consumption of raw materials	483	48.3%

Table 2 shows that 87% of the respondents believed that insufficient fund is the major factor militating against the level of efficiency of the Emene petroleum depot in terms of waste management and control.

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4. CONCLUSION

In conclusion, waste production, management and disposal involves a variety of complex activities with a great potential to effect health directly or indirectly through many pathways and mechanisms, only partly understood. The health effects includes an increased risk of cancer and mortality, respiratory disease, congenital malformation and low birth weight, also wellbeing is affected through annoyance due to odour. Overall, however, the evidence is not conclusive and more research base necessary for developing sound policy advice.

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