Appraisal of Safety Climate In Government And Private Analytical Laboratories In Warri Delta State, Nigeria.

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Abstract - The level of safety awareness in private and government oil and gas related analytical laboratories in Warri was appraised. The study was carried out with the aid of a standardized checklist adapted from guidelines for laboratory safety. The result showed that there is correlation between the level of safety performance and the safety climate in the laboratory. Also, the level of safety performance in the private laboratories were more satisfactory compared with government laboratories. The need for effective integrated management of occupational health and safety in the laboratory is suggested.

Keywords: Safety , Government, private, laboratory.

1.0 INTRODUCTION

Laboratory workers generally are faced with many hazards at work and his/her health and safety may be severely jeopardized if adequate preventive protective measures are not taken, [1] The prevention of occupations hazards in laboratories requires a thorough knowledge of the risk and practical measures to be taken. Between 2008 and 2009 in United Kingdom, more than one hundred and thirty thousand (130,000) reported work place incidence occurred, one hundred and eighty (180) deaths and almost five million working days lost to associated injuries [2]. Therefore, an ideal safety climate practice in the laboratory will help in sustaining the maximum resistance towards its operational hazards [2]. By identity and organizational safety climate within a work place, it will help to identify the state of safety in the work place without having to wait for the system to fail. [2] The purpose of this study was to appraise the level of safety climate in government owned and private owned oil and gas analytical laboratories in Warri and environs. Also, to know how management commitment influence the organization's safety climate and the influence of management leadership effect on worker's attitude toward accident prevention.

2.0 METHODOLOGY

Five government owned laboratories and five private laboratories all of them rendering services for the oil and gas industry were selected for this study, all the laboratories are based in Warri.

2.1 Survey Instrument

A structured checklist developed by adapting guidelines for laboratory accident prevention was used to collect the data for this study[3]. The data collected included the safety awareness, safety climate, safety performance and management commitment to safety in the laboratory.

Primary source of data:

This was achieved by administering the checklist on the laboratory personnel and safety officers were they are present and personnel interviews were necessary.

Secondary sources of data:

This was obtained from previous published relevant journals, textbooks and internet. The participants were scored on some items using biosafety attitudinal scale. These items included (a) wearing of hands gloves, putting on of laboratory coat during operation and others that were based on personnel observation of the workplace and workers during operations.

3.0 RESULT

Total of 226 checklist were administered to the laboratories personnel. Their responses were shown in tables 1 and 2.

Table 1: Government owned laboratories

Level of safety performance	Laboratory score									
	Lab 1		Lab 2		Lab 3		Lab 4		Lab 5	
	Score	%	Score	%	Score	%	Score	%	Score	%
Satisfactory (S)	93	83.64	81	75.70	54	68.35	90	80.36	6	10.71
Acceptable (A)	18	16.07	22	20.57	14	17.72	18	10.07	24	42.86
Unsatisfactory (U)	2	1.79	4	3.73	11	13.92	4	3.57	26	46.43

Table 2: Private Owned Laboratories

Level of safety performance	Laboratory score									
	Lab 1		Lab 2		Lab 3		Lab 4		Lab 5	
	Score	%	Score	%	Score	%	Score	%	Score	%
Satisfactory (S)	93	95.88	84	75.68	108	96.43	66	62.86	102	91.07
Acceptable (A)	4	4.12	24	21.62	4	3.57	36	34.28	10	8.93
Unsatisfactory (U)	0	0.00	3	2.70	0	0.00	3	2.86	0	0.00

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3.1 Data Analysis

The data obtained from the study were presented in tables 1 and 2. There is need to test if there is relationship between the laboratory (public or private) and level of safety performance.

Test of Hypothesis:

H_o: There is no relationship between government owned laboratory and level of safety performance.

H_a: There is a relationship between government owned laboratory and level of safety performance.

H_o: Null hypothesis

H_a: Alternative Hypothesis

From table 1; Can be used to test for this Hypothesis by Row X column contingency table and X^2 test.

Testing the level of significance α at 5%

$$X^2_{\text{calculated}} = \frac{\sum (0_i - E_i)^2}{E_i}$$

$$X^2_{Cal} = 140.28$$

From the Row X column contingency table

$$\therefore X^2_{0.95,}8 = 15.50$$

$$\therefore X^2_{calculated,} > X^2_{table}$$

:. Accept Ha and reject Ho.

:. There is a relationship between government owned laboratory and level of safety performance. Therefore, management leadership and employee involvement is the key factor to high level of safety performance. A laboratory with high level of management commitment and employee involvement will likely have very low lost-time injury and vice versa. A high safety performance laboratory have a number of traits as can be observed from the results. Firstly, safety and health efforts are fully integrated. Secondly, their culture characteristic include specific management behaviour which improve safety and performance such as treating employees with respect, providing positive feedback and encouraging effective communication. The results form the government owned laboratories in table 1 showed that lab 1, lab 2 and lab 4 scored high percentage in safety performance and awareness which they can maintained and improve upon. This show that there is positive safety climate in the laboratories characterized by communications based on mutual trust and by confidence in the efficiency of preventive measures adopted. Laboratory 3 and 5 need to pay good attention to good safety performance by safety awareness and training. The private owned laboratories in table 2 have excellent percentage in safety of a good management commitment to safety and positive attitudes of the laboratories workers towards accident prevention. From the result it was observed that when the level of safety performance between private and government owned laboratories were compared there is a significant difference in their level of safety performance. The participants were scored on a three points scale on a particular item. (6) Satisfactory (S), acceptable (A) and unsatisfactory (U). The participant score 3 marks in an item that is satisfactory, 2 marks when it is acceptable and 1 mark when it is unsatisfactory. Zero is scored when the stated safety measures for accident prevention was not observed.

4.0 RECOMMENDATIONS

i. Laboratory personnel should exercise a duty of care by working in a safe and efficient manner, having regard to their personal safety and the safety of other workers and the public.

ii. The management should ensure a safe workplace and always ensure continuous safety improvement which can encourage high productivity, system quality and good financial income for the company.

iii. Legal compliance and socially responsible outcomes through effective, integrated management of occupations health and safety must be pursued by the personnel.

iv. Safety supervisors should be competent and adequately empower to be able to access and share legislation, codes and standards, plan and implement safety requirements. Monitor and report safety performance or non-compliance.

v. System weaknesses such as inadequate safety training, production pressures, excessive demand tasks, high risk environments, faulty equipments and long work hours contribute to accidents. Therefore, for reduction in accident rate this weaknesses must always be corrected whenever and wherever it is present in the system.

vi. Personnel should adhere to safe work practices and they must always report any unsafe act notice among their colleague.

5.0 CONCLUSION

We have appraised safety climate in private and government own oil and gas related analytical laboratories we reported that there is a relationship between the laboratory ownership and level of safety performance in terms of management commitment in providing enabling environment for good laboratory safety performance. The level of safety climate among the private owned laboratories in Warri was very significant when compared with those laboratories own by government. The management and personnel in the system have roles to play in a work place to ensure safe climate in the laboratory which must be the duty of everyone. This will be achieved by ensuring efficient organizational culture.

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