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# Occupational Health and Safety Management: Safe work environment in the local Automotive Garage in Ghana

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**Abstract**

Clean and safe environment is essential to prevent workplace accidents through slips, trips and falls. This study was carried out to evaluate the knowledge level of local artisans regarding clean and safe environment in the automotive garages in Ghana. Two hundred (200) local artisans were randomly selected from the selected study areas. Questionnaires were administered to the artisans and data collected was analyzed with Statistical Package for Social Scientists (SPSS) version 16. The study shows that local artisans have some level of knowledge concerning clean and safe environment, with most garages operating under open environment. Majority of the garages are spacious with good ventilation and lighting but lack toilets and other sanitary facilities with untidy working floors full of oil spillages. Therefore, policies and regulations with respect to the clean and safe work environment need to be properly enforced and there is the need for more education of the informal sector workers on environmental issues in Ghana.

**Keywords:** Clean work environment, health and safety, automotive workshops, Local artisans, Ghana.

## Introduction

Occupational health management is a system that tracks each incident that relates to employee health and safety. It integrates the entire plan of an organization into a unified whole that assumes complete responsibility for each employee. This means that it is concerned with prevention as it is with health care after an accident. The goal of Occupational Health and Safety is to do everything that can be done to prevent accidents and minimize

illness. Ultimately, that is all that can be done, but it is also considerably more than has been done in the past (Cruickshank, 2010).

In occupational health case theory, the work environment is the first line of defense for worker health and safety. Compliance with Occupational Safety and Health Authority (OSHA) standards is taken for granted, but that is often the starting point for safety. Constant monitoring and auditing of the safety conditions of the workplace is essential. This monitoring includes the individual employee. A health record can be kept on the employee as part of their other employment records. This process starts with a physical examination appropriate to the type of work that is done. It would be followed up by routine safety meetings stressing health related issues such as safety gear and proper lifting techniques (ILO, 2001).

When a health issue develops, either as a result of illness or accident, the employee must be covered by a health plan that is part of the overall health care system. These selected health care providers must do more than just provide "medical insurance". They must also be aware of the health and safety situation of the employer as well as the employee. Careful follow up and record keeping of every health situation can provide ideas for improving the environment for others. Occupational health should no longer be taken for granted, but rather be managed and controlled for success in organizations (Cruickshank, 2010).

Berg (2010) states that apart from reliable technologies, the operational management of an industrial plant with high risk potential is also a highly important factor to ensure safe operation and that owing to the liberalization of the markets and resulting cost pressure to the industries, the importance of operational management is growing since cost savings in the areas of personnel and organization result in reducing the number of personnel together with changes in the organizational structure and tighter working processes. Experience with accidents in different branches of industry shows the importance of safe operational management. Today, effective safety management is seen as one crucial element of safe operational management (Hess & Gaertner 2006).

According to Lund and Marriot, (2005) conventional OHS institutions have been designed to protect formal workers in formal work environments such as mines, factories, offices and shops, and so have no bearing on the working conditions of those who work in more unconventional settings. Part of the reason for this is that these institutions often take on narrowly focused, inflexible forms that are based on industrialised country models. Therefore, workshop safety and health practice standards for informal small sector industries is very important to prevent and or reduce occupational accidents and injuries. Workshop safety and health comprise of activities and practices which helps to reduce or prevent occupational accidents. Some major concerns on the environmental conditions in an automotive garage may include good housekeeping, ventilation, lighting, floor and drainage, and lavatories facilities. Good housekeeping means cleanliness and good order of equipment and facilities in a workplace. It needs planning and co-operation. Housekeeping is the first step towards good occupational hygiene practice. According to Occupational Safety and Health Council (2011), a clean and tidy workplace is essential to ensure the health and safety of the workers. Regular cleaning of workplaces, equipment and devices should be carried out to ensure an adequate level of workplace hygiene. A designated person should be assigned the responsibility to oversee such operations.

According to Elnour and Laz (2013), most vehicle maintenance centres in Khartoum are private owned, not specially designated as auto repair workshop area. Work is done inside or outside workshop, e.g. on footpaths or road and in inadequate to safety, performing the job with missed special skillful technician and technical knowledge. The study also noted that

work is carried out on unsafe work surfaces, including a surface that is steep, unstable, loose, slippery, and boggy or has soft edges a surface that is too thin or weak to bear a load or a lifting device . Also the area is subjected to subjected or exposure to harmful chemicals or other risks. Furthermore, poor visibility and lighting are available at breakdown site and also, spills-wet patches are not cleaned up. Absorbent materials are not available and floor surfaces are slippery when wet, or uneven with cracks and holes.

Occupational Safety and Health Council (2011) posits that tidiness improves work performance and reduces accident. Equipment, tools, containers and small items on work benches should be kept neat and arranged in an orderly fashion. Sufficient space for storage of articles and goods is important. According to Worksafe-Victoria (2004) one of the most common category of injury in automotive workshop is slips, trips and falls, usually from floors in substandard condition. These injuries are easily preventable.

Occupational Safety and Health Council (2011) states that ventilation is the process of supplying and removing air by natural or mechanical means to and from a workplace and opine that it is essential to ensure that adequate ventilation is provided to a workplace, especially in an enclosed building. General ventilation is designed to provide fresh air for breathing by the occupants, control of thermal conditions and keeping the air free from contaminants. The fresh air intake points of a ventilation system should be away from any source of contaminants. Filtration or cleaning of the incoming air before being supplied to a workplace is recommended.

According to HSE (2007), Workplace (Health, Safety and Welfare) Regulations (1992) spells out the following:

- Workplaces need to be adequately ventilated. Fresh, clean air should be drawn from a source outside the workplace, uncontaminated by discharges from flues, chimneys or other process outlets, and be circulated through the workrooms.
- Ventilation should also remove and dilute warm, humid air and provide air movement which gives a sense of freshness without causing a draught. If the workplace contains process or heating equipment or other sources of dust, fumes or vapours, more fresh air will be needed to provide adequate ventilation.
- Windows or other openings may provide sufficient ventilation but, where necessary, mechanical ventilation systems should be provided and regularly maintained.

It is essential for employees to work and move around safely in a workplace. Natural lighting is preferable but due to its unreliable nature and many other uncontrollable factors like sky brightness, seasonal variation, distance from windows and limited window area, etc., artificial lighting is often used as a supplement to daylight. Modern indoor work environment relies very heavily on artificial lighting. Artificial lighting so provided should enable employees to see the visual task with ease and improve accuracy for better performance. The appearance, colour and details of the interior can also be enhanced through appropriate lighting. Consequently, according to Occupational Safety and Health Council (OSHC) (2011), in workplaces, the artificial lighting provided should be such that there is no risk of accident to all employees (too dim), nor should it be damaging to their eyesight such as causing glare (too bright) or visual fatigue.

According to Workplace (Health, Safety and Welfare) Regulations (1992) as cited by HSE (2007), lighting should be sufficient to enable people to work and move about safely. If necessary, local lighting should be provided at individual workstations and at places of particular risk such as crossing points on traffic routes. Lighting and light fittings should not

create any hazard and automatic emergency lighting, powered by an independent source, and should be provided where sudden loss of light would create a risk.
Some activities in a workplace are liable to make the floors or wall surfaces wet. An effective drainage system should be provided so that water can be removed and drained quickly from the floor. This prevents the floor from causing slips and accidents, and reduces the flourishing growth of mould and other micro-organisms. (OSHC, 2011). Sufficient sanitary facilities should be provided for uses by workers in a workplace. They should always be maintained clean and hygienic (OSHC, 2011).
HSE (2007) states that, provision of suitable and sufficient sanitary conveniences and washing facilities should be made readily accessible, kept clean, adequately ventilated and lit. Washing facilities should have running hot and cold or warm water, soap and clean towels or other means of cleaning or drying. If required by the type of work, showers should also be provided. Men and women should have separate facilities unless each facility is in a separate room with a lockable door and is for use by only one person at a time.
A key component of health and safety practices in an automotive repair garage is the environmental condition under which the worker operates. Osei-Boateng and Ampratwum (2011), state that the informal sector in Ghana is characterized by poor environmental conditions. Majority of informal sector workers operate from their residential premises and others work from public places in temporary shed and structures; under trees or open spaces. Poor public and environmental health, in both the residential and market areas where informal sector workers operate is a major urban problem in Ghana and jeopardizes the health of many informal workers (Osei-Boateng and Ampratwum, 2011). Therefore, this study was carried out to assess the environmental conditions in some local automotive garages in Volta Region, Ghana.

## Methodology

*Population and sampling*

The study was conducted in ten municipalities and districts in the Volta Region of Ghana. Six key local garages made up of various specialist workshops were randomly selected. The specialist workshops had artisans such as auto mechanics, auto electricians, and welders. In addition, vehicle body sprayers and vulcanizers were also identified in the selected study sites. In all, 50 specialist workshops including vehicle spraying and vulcanizers' workshops were involved in the study. It was estimated that the population of artisans were about 400 in all these local garages selected. Out of the 400 population, 200 artisans were randomly selected which constituted the sample for the study. This was based on the willingness of artisans to be part of the study. All the selected artisans in the sample were interviewed by the researchers and their trained assistants using a questionnaire developed.

*Design of research instrument*

Questionnaire was the main data collection instrument. A set of questions relating to workshop environment were developed for respondents to tick responses applicable to them. The questionnaire was in two parts. The first part focused on the biographical data of the respondents while the second part of the questionnaire covered work environment of local artisans.
A pilot study was first conducted in garage outside the study area but with the same settings as garages involved in the study. This was done in an informal manner to afford the researchers the opportunity to correct the instrument for the main study and also enable the researchers to determine the reliability of the instrument.

*Data Collection Procedure*

Permission was first sought from the various bodies that were involved in the study. On approval, the researcher selected artisans randomly from the various workshops that constituted the sample for the study. A convenient time was arranged with the artisans for the administration of the questionnaire. All selected artisans in each workshop were put together on the appointed date and briefed on the objectives of the study and how to answer the questionnaire. The questionnaires were filled by the respondents and assistance given to respondents who had some difficulties by researchers and their trained assistants. The completed questionnaires were collected after the exercise.

*Data analysis*

The questionnaires were edited, coded and entered into Statistical Package for Social Scientist (SPSS) version 16 software. Tables comprising percentages and frequency were carried out using the SPSS to establish the relationship between variables.

## Results And Discussion

*Reliability Test*

The reliability test checked the consistency or whether the questions concerning the work environment were correlated with each other. Cronbach's alpha test (α) measures the correlation among the variables of the questionnaire. The higher the correlation value calculated for the variables of the scale, the more consistent the research instrument. In general, the accepted Cronbach alpha value is 0.7 and above, whiles a reliability coefficient of 0.6 is acceptable for exploratory research. In this study, the Cronbach alpha reliability test (α) of the scales was 0.898 which indicates that variables under the factors were worthy and adequate to be retained on the scale and that there was no need for deletion.

***Biographical data***

Table 1 shows the biographical data of the respondents studied. The result indicates that all the respondents were males. This is because local automotive works is a masculine occupation in the study area. Majority of the respondents (56%) were of the younger age bracket of 26-35 years. About 39% of the respondents had 6-10 working experiences which imply that they have enough experience to know about workshop hazards and safety management. In addition, most of the respondents (57.5%) had up to basic education while 8.5% had no formal school education. About 86% of the respondents were masters at their workplaces and from different job specializations with most of them being auto mechanics.

Table 1:
Biographical variables of respondents

| Variables | Frequency | Percentage |
|---|---|---|
| **Gender** | | |
| *Male* | 200 | 100.0 |
| **Age (years)** | | |
| *Under 25* | 27 | 13.5 |
| *26-35* | 112 | 56.0 |
| *36-45* | 51 | 25.5 |
| *56 and above* | 10 | 5.0 |
| **Work Experience (years)** | | |
| *Under 5* | 44 | 22.0 |

| | | |
|---|---|---|
| *6-10* | 78 | 39.0 |
| *11-15* | 48 | 24.0 |
| *16-20* | 13 | 6.5 |
| *Above 20* | 17 | 8.5 |
| **Level of education** | | |
| *Informal* | 17 | 8.5 |
| *Basic* | 115 | 57.5 |
| *Secondary/Technical* | 64 | 32.0 |
| *Tertiary* | 4 | 2.0 |
| **Job specialization** | | |
| *Auto Mechanics* | 67 | 33.5 |
| *Auto Electricians* | 51 | 25.5 |
| *Welders* | 24 | 12 |
| *Sprayers* | 27 | 13.5 |
| *Vulcanizers* | 31 | 15.5 |
| **Positions at workshop** | | |
| *Master* | 172 | 86.0 |
| *Apprentice* | 28 | 14.0 |

***Workshop Environment***

A clean and tidy workplace environment is essential to ensure the health and safety of the workers at workplaces (OSHC, 2011). Most respondents agreed that spacious environment, clear and accessible exit, adequate lighting, well ventilated environment, clean environment and slip free environment were very important factors to reduce accidents at local garages (Table 2).

Even though majority of respondents (59.4%) agreed that their workshops are kept clean, the study revealed that oil spills on the ground in the workshop are not immediately cleaned posing the risk of slip and fall. This is consistent with the findings of Mohamed and Hala (2013) who noted that spill-wet patches are not cleaned in the workshops.

It is essential for artisans to work and move around safely in the workplace. 60% of respondents agree that the working areas in their shops are spacious enough. This is good to prevent overcrowding related accidents.

Natural lighting is preferable but due to its unreliable nature and many other uncontrollable factors like sky brightness, seasonal variation, distance from windows and limited window area, etc., artificial lighting is often used as a supplement to daylight. General ventilation is designed to provide fresh air for breathing by the occupants, control of thermal conditions and keeping the air free from contaminants (such as tobacco smoke, body odour and other air-borne contaminants). It is worth noting that most of the local garages studied are being operated in an open environment which has adequate ventilation from the natural air.

However, the floors are bare ground which becomes very slippery during rainy season. In addition, no formal suitable toilet facility is provided and most often workers rely on the closers toilet around their workshops when the need arises. This contradicts with HSE (2007) statement that provision for suitable and sufficient sanitary conveniences and washing facilities should be made at readily accessible places. Generally, most of these local garages are located in open places where other sanitation conditions are in deplorable state. Based on Occupational Safety and Health Council (2011) standard for operating workshops, these

local automobile garages were not up to the standard since they lack most of facilities for good workshop environment.

The study further revealed that most openings in workshop floors are inadequately covered. This is evident by the fact that only 17.7 % agreed that openings in their workshop floors are adequately covered. An average of 26% of respondents are always neutral on environmental issues indicating that such group are unaware of environmental issues which call for education on such matters.

Table 2: Workshop environment

| Questions | Responses (Percentages) | | | | |
|---|---|---|---|---|---|
| | SA | A | N | DA | SDA |
| 1. The working area is spacious enough for my work | 24 | 36 | 11.5 | 20 | 8.5 |
| 2. All exits from the workshop are clear and accessible | 22.0 | 35.6 | 16.9 | 17.0 | 8.5 |
| 3. There is adequate provision for lighting in the shop | 18.6 | 32.2 | 20.3 | 11.9 | 16.9 |
| 4. The workshop is well ventilated | 44.1 | 33.9 | 15.3 | 5.1 | 1.7 |
| 5. The workshop is kept clean | 11.9 | 47.5 | 23.7 | 10.2 | 6.8 |
| 6. The workshop floor is free from slips | 15.3 | 35.6 | 23.7 | 15.3 | 10.2 |
| 7. Suitable toilet facilities are provided and are clean | 3.4 | 15.3 | 18.6 | 6.8 | 55.9 |
| 8. Openings on workshop floors are covered adequately | 6.8 | 11.9 | 30.5 | 23.7 | 27.1 |
| 9. Oil spills on the ground are cleaned immediately | 8.5 | 18.6 | 18.6 | 35.6 | 18.6 |
| 10. Equipment are properly arranged in the workshop | 6.8 | 20.3 | 32.2 | 27.1 | 13.6 |

**Conclusion**

Workshop environment is a key aspect of occupational health and safety management. This is because every worker works in an environment which has some level of influence on its performance. In this study, majority of the respondents were aware of influence working environment has on occupational health and safety management. They agreed that spacious, clear, accessible, exit, adequate lighting, well ventilated, clean and slip free environment were very important factors to reduce accidents at local garages. However, the garages studied were observed to be untidy and has slippery floors with oil spillages. They are operated in the open environment and lack basic sanitary facilities. Therefore, these garages are not up to the OSHC (2011) standard. Thus, there is a need for policies and regulations to be formulated in Ghana to regulate local garage environment.

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