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Evaluate the Behavior of Industry Workers Toward Safety and their Impacts in Environment

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Abstract- In this paper, evaluated the behavior of the workers in the industry toward safety, conducted among workers in workshops and factories in the Omdurman industrial area to identify and highlight the behaviors of workers toward occupational health and safety and their impacts on the environment. Data were collected through a questionnaire given to 58 workers, to explain the attitudes and practices of workers and tanker drivers were observed. Interviews were conducted with number of decision-makers in several departments concerned with the environmental impacts of industry. The workshops studied included welding, carpentry, car repairing, and disposal and restoring batteries. Related, hazards were identified and classified. The caught in or between things had the highest incidence, the machines were the primary cause of fractures, amputation, and wounds (17.2%, 15.5%, 24.2%, respectively). Equipment was leading the main cause of burn and contusive from the heat source (8.6%, 12.1%, respectively). Hazardous materials was the fundamental cause of poisonous from a chemical birth sources, coma, and death (13.8%, 6.9%, respectively).

Keywords: safety, occupational health, worker, industry, unsafe acts, accident. GJRE-A Classification: FOR Code: 091399

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Strictly as per the compliance and regulations of:



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Evaluate the Behavior of Industry Workers Toward Safety and their Impacts in Environment

Mustafa Eldoma Hassan ^a, M. I. Shukri ^o & Khalil. B. Ahmed. A ^p

Abstract- In this paper, evaluated the behavior of the workers in the industry toward safety, conducted among workers in workshops and factories in the Omdurman industrial area to identify and highlight the behaviors of workers toward occupational health and safety and their impacts on the environment. Data were collected through a questionnaire given to 58 workers, to explain the attitudes and practices of workers and tanker drivers were observed. Interviews were conducted with number of decision-makers in several departments concerned with the environmental impacts of industry. The workshops studied included welding, carpentry, car repairing, and disposal and restoring batteries. Related, hazards were identified and classified. The caught in or between things had the highest incidence, the machines were the primary cause of fractures, amputation, and wounds (17.2%, 15.5%, 24.2%, respectively). Equipment was leading the main cause of burn and contusive from the heat source (8.6%, 12.1%, respectively). Hazardous materials was the fundamental cause of poisonous from a chemical birth sources, coma, and death (13.8%, 6.9%, respectively).

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I. INTRODUCTION

udan has witnessed industrialization since the mid-fifties, such as Soap and Oil, Printing, Soft Drink and sweet, cottage industries, and some utilities such as Railways, Water, and Electricity, etc. Spread in several geographical areas. Workers enrolled at that time were in the order of a few thousand. Legislation concerning worker's safety was first passed as envisaged in the workshops and factories ordinance 1949. Although occupational health (OCH) has been practiced since 1967, its functions were only stipulated after the Public Health Act passed in 1975. These stated establishment a section of OCH [1]. Small workplaces were not considered in safety policies. When a person walks through, he will immediately notice the lack of security, protection is a culture that must be built in all working in these workplaces [2]. The typical, standard physical hazard in most industries is heat, noise, ionizing radiation, and vibration [3]. Mechanical vibration produces a level of danger that affect the nerves, and noise exceeds the permissible level, leads to loss of

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Author p: ALIMAM ALHADI College-Electrical Engineering, Sudan. e-mail: khalil.babiker@ihu.edu.sd hearing [4], and ergonomics are related to the space within the workshop building and layout the machine. The size of the workshop does not allow workers to assign separate places for raw materials and products. The passage between devices is so tiny to endanger the workers [5]. With rapid industrial development other minerals like asbestos, radioactive ore, oil and diesel which are also source of occupational disease [6]. The study conducted that the research is still in its infancy in Sudan, various researchers have examined the nature, source, and impacts of accident, injuries, and illnesses that severely comprises workers Health and safety [7].

a) Sample Data Manipulation

The data in this study was collected from the following personal information of the targeted people. As shown in figure 1, the sample was randomly selected from most of the education levels present in the study area, to compare the education level to knowledge. Clear successes indicator were given that confirmed the correct sample selection.



Figure 1: Education level

The type of job affects the safety behaviors of many workers. So the main occupations concerned with the conduct of workers towards occupational safety and health and their impact on the environment were chosen, as shown in figure 2.

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Figure 2: Respondents by job

The study area is characterized by age diversity. It has been observed that age has a direct impact on safety procedures, as in figure 3. Also, practical experiences affect occupational safety and health decisions, so multiple occasions were selected in this study, as shown in figure 4.



Figure 3: Respondents by age





There are many industrial activities in the study area. Two types of activities were selected that have a areas, as in figures (5 and 6).

hazardous on health in the surrounding residential



Figure 5: Types of workshops





The leading causes of accidents in the study area were identified. The following figure determines the percentage of the causes of the accidents. So the most frequent causes of accidents, 48.3% of workers said unsafe behavior, and 27.6% said unsafe work and, 24.1% said personal reasons. This figure represents the accident analysis according to the hazardous workplace condition, dangerous acts, and unsafe individual factors, respectively. The dangerous workplace conditions included inadequate guard, unguarded hazards, defective safety devices, faulty or lack of tools or equipment, hazardous workstation layout, unsafe ventilation or lighting, lack of personal protective equipment (PPE), and flimsy clothing, and lack of or insufficient training in the engineering, industry.



Figure 7: Causes of Accidents

II. Results

By analyzing the manipulated data, the leading causes of injuries were identified, as shown in the following tables.

Personal causes	Number of people	Percentage %
Deliberate	0	0%
causes	0	078
Polemical	17	29.3%
Fatigue	16	27.6%
Carelessness	20	30.5%
Other	5	8.6%
Total	58	100%

Table 1: Personal causes

As show in table 1 the personal causes of work accidents, no deliberate causes, but 29.3% of personal reasons were polemical, 27.6% of the ground from fatigue, 30.5% carelessness, and 8.6% from other reasons.

Technical causes	Number of people	Percentage %
Arrangement of machines	14	24.1%
Type of machine	15	25.9%
Tools	13	22.4%
Lack of maintenance	13	22.4%
Other	3	5.2%
Total	58	100%

Table 2 shows the technical causes that cause accidents 24.1% from the arrangement of the machine, 25.9% from the type of machines, 22.4% from tool, 22.4% from lack of maintenance, and 5.2% from other.

Table 3: Medical causes

Number of people	Percentage %	Medical cause
22	37.9%	Intensity of light
4	6.9%	Ventilation
5	8.6%	Noise
19	32.8%	Poisonous material
8	13.8%	Others
58	100%	Total

As shown in table 3, the accidents from medical causes were 37.9% from the poor levels of light, 6.9% from ventilation, 8.6% from noise, 32.8% from poisonous material, and 13.8% from other materials.

Administrative causes	Number of people	Percentage %
Lack of training	15	25.9%
Lack of follows	20	34.5%
Lack of awareness	8	13.8%
Lack of PPE	9	15.5%
Others	6	10.3%
Total	58	100%

Table 4 shows the accidents from the administrative causes 25.9% of casualties from lack of training, 34.5% of accidents from a lack of awareness but 15.5% from lack of PPE, and 10.3% from others.

Common injuries	Number of people	Percentage %
Fractures	10	17.2%
Amputation	9	15.5%
Death	1	1.7%
Poisonous	8	13.8%
Wounds	14	24.2%
Coma	4	6.9%
Burns	5	8.6%
Contusive	7	12.1%
Others	0	0%
Total	58	100%

Table 5: Most common injuries

Table 5 show the accident incidence rate of the different types of accident. The caught in or between things had the highest incidence. The table shows the distribution of accidence according to their causes; it, is clear from the table that machines were the primary cause of fractures, amputation, and wounds (17.2%, 15.5% and 24.2%, respectively). Equipment was the leading cause of burn and contusive from the heat source (8.6%, 12.1% respectively). Hazardous materials were the fundamental cause of poisonous from a chemical sources birth, coma, and death (13.8%, 6.9%, respectively).

III. Discussion

As indicated by the result, the majority of workers early, young in age and have low levels of education not reached primary school. When investigating their knowledge about hazards exposed from the jobs, the finding revealed that their perception towards such hazards was negatively associated with the magnitude of actual the real situations. This indicates that knowledge about the dangers, risk need high levels of education by which individuals can get, the difference between what kinds of risky work. On the other hand, the findings of the interview showed that although the decision-makers in safety are fully aware of the risk of hazards, they complained about the absence of collaborative work for managing these hazards due to neglecting this issue by the specialized authorities. The most frequent unsafe acts by workers were using defective equipment and failure to use perfect equipment, tools, especially in oil and soap. engineering and food industries. This might be due to the lack of regulation of occupational health and safety in Sudan. As regards unsafe personal factors, attitude had the highest percentage in all industrial this might be due to the bad psychological conditions, including, poor wages, critical incident and accidents were caused by combination of equipment and unsafe personal factors. Most researchers believed that unsafe personal factors were key agent for more than 70% of occupational accidents.

IV. Conclusions

The study reviewed health and safety. Results showed there is no system for safety and health management in Omdurman-Locality. There are no control or safety measures. There are some gaps in the knowledge of workers in safety and health. However, there is generally a positive attitude to improving industrial safety and health among those surveyed and interviewed. A national program for industrial safety management is essential in Sudan.

This work can be further extended by studying the impact of environmental pollution, and the effectiveness of safety procedures on productivity.

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