

Occupational Health Hazards in Nigeria Industries: Implication for Increased Health Education

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Abstract

Industrialization and mechanization in Nigeria are increasing while occupational health problems are becoming prominent. Occupational health is the area of work in public health to promote and maintain highest degree of physical, mental and social wellbeing workers at all occupations. While occupational health hazard is any workplace condition that causes a risk to employee's health which involves injury, ill health, or something a worker may suffer and experience as a result of doing his or her job. This paper is aimed at examining occupational health hazards like dust hazard, chemicals, carbon monoxide poisoning, noise hazard, light hazard, fatigue hazard, vibration hazard, heat hazard that lead to diseases and the need for health education in Nigerian industries. The study recommended that health education programmes should be carried out in various industries to create awareness of the peculiar hazards in the industries and for workers protection and better efficiency and productivity amongst others.

Key words: Hazard, health, noise, poisoning, annoyance.

Introduction

Every job done by an individual usually go along with some hazards. Workers in various industries are prone to some degree of risk or health hazards consequent upon the nature of their job. Hence many occupations are now recognized as important factors in causing disabilities to workers Swuste and Eikemans (2016). Industrial health hazards according to ocheya (2009) can come in the form of chemical, biological and psychological hazards. Chemical hazards arise from gases, liquid such as acids, dust, fumes, pesticides, and radioactive materials. These chemicals can enter the body the body by inhalation through the nostrils, through ingestion by eating food contaminated with one of the offending substances or through radiation by exposure to radioactive elements swuste and hale, (2004).

Physiological hazards according to Beatjer (2007) usually arise from disease infection where good personal hygiene has not been strictly adhered to, such as improper washing of body parts and clothing after work. In his own submission Webbs (2012) opined that psychological hazards may emanate from home and worker-employer relationship or from very long period of isolation from home and family. These occur mainly among miners, seafarers and offshore workers.

Physical hazard may be caused by accident like electrocution, falls, cuts or drowning. Other physical hazards include, heat, noise, explosion, vibrations cold, and poor light.

World Health Organization (2013) quoting the Director General asserted that the amount of toxic chemical generated in different parts of the world has been estimated at 600,000 tones while the National Institute of occupational safety and health of the United State of America has estimated that an additional 3,000 tones are generated every year. Workers in these industries are the first to be exposed to these toxic substances.

World Health Organization (2013) still commenting on the physical hazards, opined that exposure on noise, heat, stress, vibration, microwaves, atmospheric pressure, changes and unsuitable lighting conditions are the most common physical hazards faced by workers. The magnitude of the problems varies from industry or occupation to the other. Occupational stresses and strains may affect the health and behaviour of the workers in variety of ways. They may manifest in simple behaviour changes like absenteeism, loss of motivation, irritability and fatigue. Overt psychological disturbances like acute neurotic manifestations and the excessive use of alcohol and drug, again there may be more protracted or chronic disturbances such as psychosomatic disorders.

In his contribution to industrial or occupational hazards, Moses (2013) highlighted some of the health risks that may occur at work places to include the following: damaging noise levels, for example, from machinery which can cause deafness, radiation exceeding safe doses which can result in leukaemia, cancer and damage to the Fetus, air pollution from dust in the air, from cotton, and textile materials, fumes from industrial engines which can cause respiratory diseases, accidents which usually occur when workers are ill, tired, mentally fatigued or under stress and when safety precautions are not kept; dermatitis or skin problems may arise due to contact with chemicals and drugs; mental strain when work conditions are not favourable, health and psychosomatic illness may result; bacterial and viral infections from pathogens which may cause infections among those working with sick people or animals, and those in public health laboratories; and physical injuries like cuts, wounds, back pain, sprain and so on, are often common with people working with heavy machines and those that climb heights.

In Nigeria where there are cement petrochemical, oil and gas, pharmaceutical, cosmetics, bakeries, welding, blast, metal, drilling quarry and block industries, laboratories and health centres, workers are daily being exposed to various health hazards and problems and this therefore calls for a review of occupational health hazard in Nigerian industries which would necessitate industrial health education for the prevention of diseases injuries, poisoning and other health problems.

Dust Hazards in Industry

Cement, flour mill asbestos and cotton industries generate a lot of dust which are hazardous to the health of industrial workers Claxton and Barring (2010) observed that, the most serious hazard today in many industries is dust. Dust does not only block the tissue of the respiratory track, but also causes irritation, and it may also carry germs with it. Dust diseases affecting the respiratory system are collectively called pneumoconiosis. Pneumoconiosis results from inhalation of a variety of industrial dusts, consequently the name of each form of the disease

sometimes depends on the type of dust inhaled. For instance, pneumoconiosis due to the inhalation of silica, cotton, and asbestos are called silicosis, by sicinosis and asbestosis respectively. Other examples of diseases resulting from large quantities of dust particles inhaled over a long period of time include pulmonary tuberculosis and cancer of the bronchus. Steel and other metallurgical works are probably the worst producers of dusts. The source of red dust is the oxygen lancing operation in which oxygen is bubbled through molten iron to reduce the carbon content. Blast furnaces occasionally emit black smoky dust and mineral grindingalsosheds brown dust in whatever form, they always pollute the environment. There are some organic dusts in someindustries which on inhalation cause immediate allergic reactions and asthma in some individuals WHO, (2011).

Robertson (2009) observed that numerous cases have been reported in grain- handlers, in flour-millers, in bakers in workers extracting alkaloids from vegetable materials, in crushers with a variety of different woods, and in workers connected with the paint industries. Robertson (2009) further observed that gunacia have been depicted as a powerful sensitizing agent provoking asthma in printing workers. These agents also include the spores of thermophilic actinomycetes such as micropolysporafaeni, causing farmers lung disease. The close resemblance of this sort of diseases produced by this wide variety of inhaled organic antigens to serum sickness is established and it is also evident that a range of apparently innocent dusts not excluding perhaps sisal, tea, and coffee may act as potent antigens on inhalation, producing responses that may give rise to serious diseases.

Chemical Hazards in Industry

Petrochemical, gas and oil companies, pharmaceutical, cosmetics and paint industries expose workers to chemical hazards. With reference to chemical hazards, there has been a growing realization of the importance of chemical induction of genetic changes a part from know agents that may cause cancer (carcinogens) induce morphologic abnormalities (teratogens). Claxton and Barring (2010) observed that there is a growing interest in the possibility of their synthesis in the body from simple chemical compounds normally present in the environment Chemicals may have a wide range of adverse biological effects from mild sensory impairment to death. Some chemicals, however may produce anyone or more of these reactions and may interact with one another outside as well as inside that body to produce synergistic toxicity. Hallon and George (2011).

Carbonmonoxide Poisoning in Industry

Carbon monoxide is formed by the combustion of carbon compounds underinadequate supply of oxygen. It is found in the highest concentration in the burningof coals, illuminating gas and coke. The poisonous effect of carbon monoxide is hemoglobin in the blood, a compound which is one to two hundred times as stable oxyhaemoglobin. Therefore, when carbonmonoxide combines with hemoglobin it reduces the oxygen-carrying capacity of the blood, and so might prevent sufficient oxygen required to sustain life from reaching the tissues. Symptoms of progressive carbonmonoxide poisoning are headache, dizziness, blurring vision, excessive fatigue, nausea, shortness of breath, poundingofthe heart (fast heart rate) unconsciousness and death (Asogwa, 1998; Swuste, 2009).

Noise Hazards in Industry

Noise is defined by Anderson, Morton and Green (1998) as any disturbing sound that interferes with work, comfort and rest. It is also seen as disturbing sound, a sound that one does not want to hear, it may be disturbing because it is loud, discordant, unexpected or necessary.

Hallon and George (2011), classified the effects of noise into four general categories:

1. Annoyance;
2. Disruption of activity;
3. Loss of hearing;
4. Physical and mental deterioration;

Excessive sound leads to somatic manifestations such as gastric problems including ulcers, diabetes and aperties such as hives due to increases stress and tension, blood pressure, peeling of the skin and constriction of blood vessels. Prolonged exposure to excessive noise certainly cause loss of attention and work inefficiency, thus contributing immensely to industrial accidents In the United States, the Environmental Protection Agency has identified seventy (70) decibels as the cut-off level for possible hearing loss, forty-five (45) decibels are recommended for indoor locations and fifty-five (55) decibels for outdoor locations where human activity takes place (Hallon and George, 2011).

According to Alexander (2004), noise is, within limits unnecessary adjunct of our civilization but except steps are taken to alleviate it, especially in industries, increasing numbers of our population will become auditory cripples. The adverse effects of noise also include decreased efficiency of workers resulting from lack of concentration. Also, great strain is put on the nervous system in the attempt to overcome the effects of noise. This leads to abnormal states of mind necessitating frequent preparation to maintain mental efficiency. Noise interferes with sleep, even though actual wakefulness may not occur. This is common among workers who live very close to places of work where machines are being operated twenty- "four hours of the day.

The negative effects of noise on the human hearing apparatus are of relatively new interest (Alexander,2004). Some one hundred years ago, isolated references were made to hearing loss among blacksmith. But with increasing mechanization and industrialization, the frequency and magnitude induced hearing loss have forcibly drawn the attention of the medical profession, industrial workers and government agencies.

Light Hazards in Industry

Writing on light as a hazard, Omaran (2008) stated that workers required to handle or view glowing materials, electro welders, and other workers exposed to light of high intensity, showed eye defects caused by excessive exposures to radiant light. Also, eye damage could be caused in workplaces by poor illumination, such as is found in mining, and by; strenuous used ofthe eye for long periods on a job under poor light.

Fatigue Hazards in Industry

In discussing fatigue in industry as a physical hazard, Grandjean (2010) stated that physical fatigue was a painful phenomenon which was usually localized in overstressed muscles, while mental fatigue is a diffuse sensation of weariness altogether, fatigue in industrial practice has chemical symptoms, which include psychic irritability, fits of depression and increased liability to illness. In an experimental work on muscular fatigue using an isolated muscle from a frog, the muscle was stimulated electrically causing it to contract and perform physical work by lifting a weight Grandjean, (2004). After several seconds he made the following observations.

The height of the lift decreased, both contraction and relaxation became slower, the latency period or reaction time (interval between stimulation and beginning of contraction) became longer. The performance of the muscle fell off with increase in strain until the stimulus no longer produced any response. Grandjean (2010) summarized that human beings showed this process in any continuous muscular activity. Herein, therefore lies the explanation of the impaired co-ordination and increased liability to errors and subsequent accidents that accompany muscular fatigue in industries.

Vibration Hazards in Industry

Long, continued and intense vibrations and repeated shocks can cause nerve injury and inflammation of tissues surrounding tendons, bones and joints. Vagale (2014) Vibration and shocks generally are known to cause irritation and discomfort if above threshold. He further recommended that workers maybe, protected against vibrations by wearing soft-soled shoes and by the use of straw, or rubber mats in drilling, quarry and block industries.

Heat Hazards in Industry

In order to create pleasant working environments in an industry, Daubenspecks (2010) explained that heat intensity, illumination and sound levels should be kept at tolerance level hazard mainly occur in bakeries, welding industries, boilerrooms, blastfurnace and metal industries. Vagale and Adekoya (2014) observed that excessive heat and humidity cause heat stroke. Rising body temperature, irritability, dizziness, nausea, headache, convulsion and partial loss of consciousness or complete loss of consciousness in severe conditions. Severe cramps of skeletal and abdominal muscles called 'heat cramps' sometimes develop with heavy muscular working temperatures above 100 °F or 37 °C when there is profuse perspiration requiring the replacement of the resultant loss of water and electrolytes. Furthermore, Olugbile (2009) opined that heat exhaustion might eventuate consequent upon exposure to excessive heat. Heat exhaustion is manifested by collapse under heat stress, sometimes accompanied by loss of consciousness. This may enhance rate of accidents in industries.

However, the most noticeable effects of excessive heat identified by industrial specialist are 'heat stroke' and 'heat exhaustion'. Industries most prone to heat hazards include among others welding establishments, bakeries, boiler-rooms, metal works, blast furnaces, etc. Other effects of excessive heat according to Anderson, Morton and Green (2008) are physical and mental activity decline, reduced bodily functioning and an apparent reduction in resistance of infection than in cooler temperatures.

Effect of Industrial Hazards on Reproduction

Sever (2010) McDonald, Lavoie, Cote and McDonald (2011) stated that there exists a wide variety of possible reproductive outcomes associated with parental exposures to industrial hazards. These include reduction of fertility, wastage, including spontaneous abortions, congenital malformations, stillbirths and neonatal deaths, intrauterine growth retardation and conditions, which develop later in life such as developmental malignancies.

All the above examples are only a few of the ill effects of exposure to occupational hazards. Several other health problems consequent upon the nature of one's job abound. One notable problem is that occupations of ten have combined exposures. [It is seldom the case that a worker is exposed to only a single potentially hazardous substance.

The Need for Health Education in Nigerian Industries

According to Bravo (2002) people are generally not aware of the risks involved in day-to-day industrial work. Risks are taken as something inherent in jobs. There are some workers who consider it a matter of male pride to carry on construction work at point high up from the ground level without any safety belt. Industrial physicians discovered a facemask hidden on a shelf in a glass factory while the worker that was supposed to wear it under-went the most incredible and unnecessary risks during the performance of his duty.

Bank, and Hoslop (2000) also reported of this "I-don't-care" attitude of some workers when he said that many people were reported to have their sensitivity to noise dulled. They put 'up with it without knowing their effects on health. Many workers, they said thought that noise could not harm them. There was again the case of a foreman who found a skilled man on a job known to be dangerous to the eyes, and who was not wearing the goggles provided him. The foreman reprimanded him seriously for that commissioning and explained to the worker the dangers he was exposing himself to. But the worker expressed that it really did not matter to him whether he made use of the goggles or not.

Entwistle (2012) observed that, if some administrators want to run occupational health service, the service should be run properly. He commented unhappily about the improper medical examinations conducted in the companies where he did some researches. He found out that many workers in those industries were suffering from advanced and often serious, illnesses. But they had managed to get employment by sending their fit relatives for the medical examination before engagement. The industrial physician and the management should have made use of passport photographs to make sure that those finally employed were those examined medically.

Conclusion

In conclusion, there is no gain saying the fact that health hazards abound in Nigerian industries with their attendant health consequences. Therefore, since the attitude of workers and management to industrial safety could be a hindrance to efforts that might be made at safeguarding or protecting the workers from harm both parties need to be educated on all the tenets of industrial health safety to reduce the incidences of injuries and illnesses daily experienced in Nigerian industries.

Recommendations

The issue of occupational hazards in industries has been discussed. Based on this discussion, the following recommendations are adduced to reduce the incidence of injuries and illnesses in Nigeria industries:

1. Health education programmes should be carried out in various industries to address the peculiar hazards in the industries in order to create awareness of such hazard and how the workers should protect themselves for better efficiency, productivity, and prevention of ill health.
2. Cement, flour mill, saw mill, asbestos and cotton industries should provide nose masks for their workers and it should be made mandatory for every factory worker and others who are entry the factory to use them.
3. Industries like bakeries, welding establishments, boiler-rooms, blast furnaces, metal industries, which generate heat, should acquire instruments for measuring and detecting dangerous heat levels. These will assist considerably in ensuring the safety of workers in these industries.
4. Industries should be well lighted to prevent sight impairment of workers resulting from poor lighting system. Welders should always use facemasks to prevent radiant light from damaging their eyes.
5. Petrochemicals, gas and oil companies, pharmaceutical, and cosmetics industries should provide protective boots, nose masks, helmets and hand gloves for workers in their industries to protect them from chemical hazard and its associated diseases.
6. Management of industries should always provide enough resting period for workers; the length of daily working hours should be reduced through shifting system. This will reduce physical and mental fatigue of worker that could lead to accident and ill health.
7. Industries which use generators that produce carbon monoxide should make sure that the pipe conveying the smoke is channeled to the outside far away from the industries. Also generators with less production of carbon monoxide should be purchased and used in the industries.
8. Drilling, quarry and block industries generate a lot of vibration. These vibrations should be minimized by wearing soft soled shoes and by using straw and rubber mat. All these should be provided for workers use in order to reduce the effect vibration has on tissues, tendons, bones and bone joints.
9. Outdated and noisy machines should be replaced by low noise generating machines and generators. They should be purchased and used by industries to eliminate the adverse effects of noise pollution in Nigerian industries.

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