SAFETY RULES AND REGULATIONS IN SOME INDUSTRIES AND VOCATIONAL AND TECHNICAL INSTITUTIONS IN NIGERIA: PREVENTIVE MEASURES AGAINST ACCIDENTS OCCURRENCE.

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Abstract.
Providing accomplished safety and suitable work environment is the most important obligation/responsibility of employers when they organize their units and delegate workers with different responsibilities. Workers also anticipate harmless and healthy environment which is their fundamental right. Generally, safety is of utmost importance and it is the responsibility of everyone. Unsafe work conditions have negative impact on employees' performance and may lead to reduction in productivity and growth of the organization. Globally, industrial or workplace related accidents and mortalities are on rapid increase. In this regard, some countries have formulated regulations and recommended legislations which authorized hazardous industries to comply with all safety rules and regulations, possess protective gears and equipment, have prompt rescue and rehabilitation systems and safety and health section with competent workers to oversee the above parameters. This paper tends to critically examined the meaning of accidents, classification of accidents, some common types of workplace injuries incurred as a result of accidents, some common causes of workshop accidents, consequences of accidents, meaning of safety and some safety rules and regulations which are preventive measures against accident occurrence.

Keywords. *Safety, Rules, Regulations, Preventive, Accidents*

Introduction.

The provision of a safe work environment for employees in industries and Technical Education institutions is a matter of utmost or paramount importance. Activities which are not likely to be harmed, that seems to reduce to the least possible level, or completely destroys or eliminate hazardous conditions that can cause bodily injury, should be strictly adhered to. Okelola (1985) stated that real safety means safeguarding against damage to machines, tools and materials as well as preventing personal injury. Bukar et al (2014) added that "when accidents occur in the workshop, sometimes it results to death, sometimes in permanent disablement and in many cases, fortunately in nothing worse than a few days or weeks absence from work". Ekeji (2004) described laboratory as a unique learning situation in which the learners may experiment, test, construct, disassemble, repair, design, create, imagine and study. No doubt, most of the tools, equipment, instruments and consumables used in industries or workshops today are very costly, easily broken or damaged, needs careful treatment, risky and dangerous. There is need for special skills, competencies and care in handling them because mistakes which may be as a result of ignorance, lack of knowledge and carelessness can lead to accidents.

According to Yekinni (2016), accidents are anxiety, sudden and unexpected events or situations without forewarning that can result into loss of materials, injury and death. It is any unpleasant state of mental uneasiness, apprehension, obsession, nervousness or concern about some uncertain events. Tuuli (2010) perceived accident as a chain of events in which something has gone wrong resulting in an undesired conclusion. Several factors are responsible for causing accident. The Occupational Safety and Health Administration, OSHA (2003) stated that hazards exist in every workshop in many different forms; sharp edges, falling objects, flying spark, chemical, noise of other potentially dangerous situations, etc. With other actions, these will worsen or deteriorate the situation of workshops. Ofunmbuk et al (2012) warned that any technical school that ignore safety practices or play lip service to its implementation, does so at its own risk because it will certainly experience serious unpleasant loss.

The consistent high fatal accident rates in developing countries emphasize the need for occupational health and safety programme that focus on prevention. It is equally important to promote educational health services development (Olagbegi et al, 1997).

Accident.

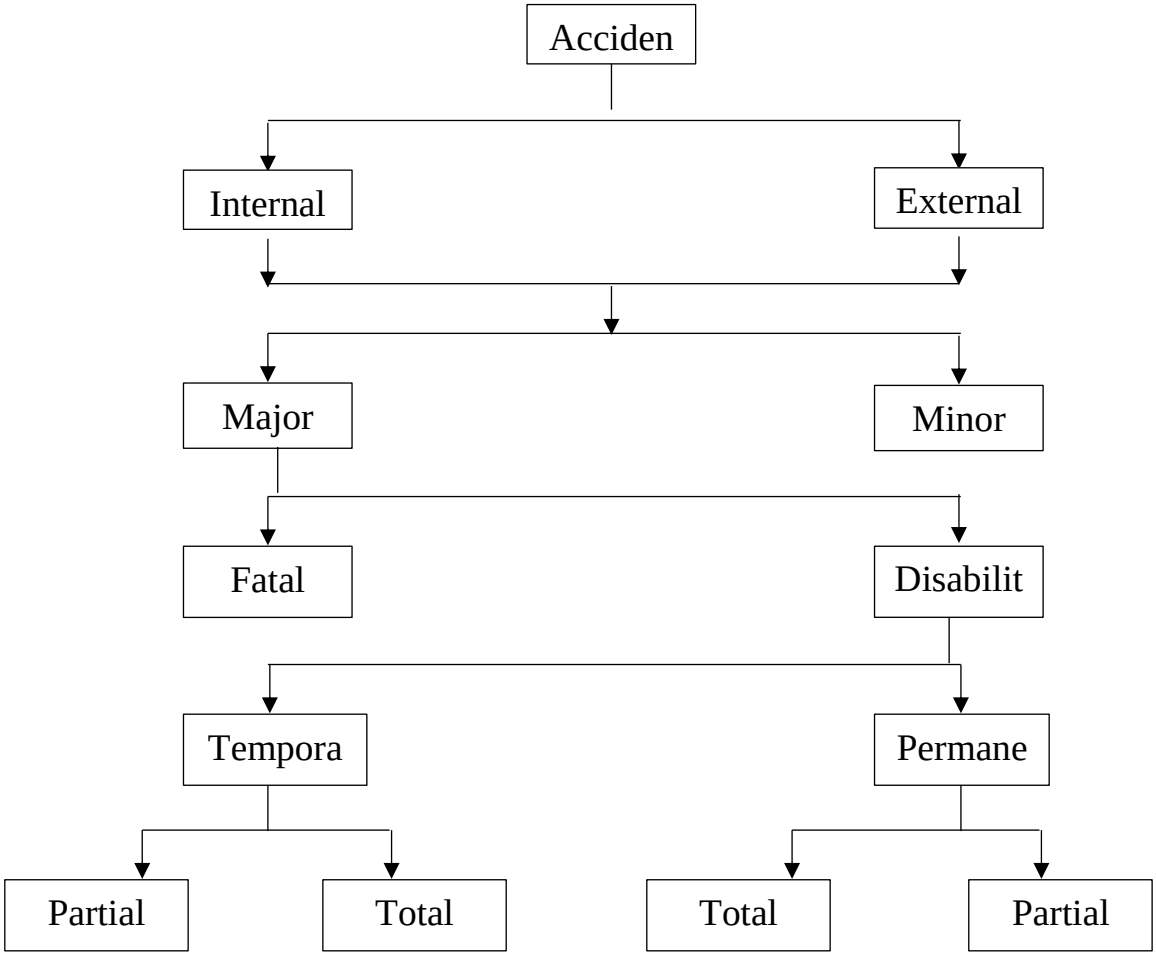
Accident is any unexpected event with negative consequences occurring without the intention of the one suffering the consequences. It can also be viewed as any unexpected event that take place without foresight or expectation. Accidents can also be said to be events that are unintended which can cause damage or death. It is an instance of incontinence. Accidents in industries are major impediments or hindrances which can cause loss of man-power and productivity, hence, delay the growth of establishment. Rapid advancement in industrialization, using electrical power, engineering, chemical and automation tools and machinery has make task to become more complex and complicated. For this reason, workers are prone or predisposed to accidents and diverse health hazards which prevent or sabotage the importance of having safe and suitable or reliable work environments in industries and other work environments.

At workplace, occurrence of accidents can be sudden and unexpected and can interrupt or impede the normal activities, whether temporarily or for a prolonged period. Industrial accidents which cause bodily injuries to workers, making them out of action for say 48 hours can be considered as workplace accidents.

Classification of Accidents.

Accidents can be classified according to nature, seriousness, number of casualties and extent of injury. Mishaps or accidents causing death, huge loss of properties, permanent or long-term impact on workers can be expressed as major accidents while small cuts or harm which may not cause a worker out of action is expresses as minor accidents. Sometimes, accidents caused by poisonous gases or chemicals can result to internal injury or sudden health

problem to workers. Classification of accidents can be represented by the block diagram shown below.



Classification of Accidents.
(Source: Green World Group India. Available at www.greenwgroup.com)

Some Common Types of Workshop Injuries.

According to Arbill Safety Blog, some common types of workshop injuries includes;

(1). Walking into Injuries:

This is the type of injury which occur as soon as a person unexpectedly or unintentionally runs into objects like glasses, windows, chairs, walls, cabinets, doors, tables, etc. Common consequences of such are head, neck, knee and foot injury. Diligence and concentration of attention and keeping the work

environment free from danger or harm, are preventive measures against these types of injuries.

(2). Repetitive Motion Injuries:

This is the type of injuries that are not easily seen but beyond doubt, they are very harmful. Repetitive motions like typing and the use of computer at all times can strain muscles, causing back pain and vision problems. The training of employees and the usage of equipment that are design for comfort or to minimize fatigue, can reduce these accidents.

(3). Slipping and Tripping:

This relates to falls on damp or wet and slippery floor or stumble/trip over unspecified thing lying on the floor. To curb this, employees need to have mental focus or pay attention to what is going on around them. Also, employees should have safety guidelines, ensuring that spills are clean promptly and that no debris which can be dangerous, is present.

(4). Reaction Injuries:

These are dangerous types of injuries which are as a result of slipping and tripping but without falling. These type of occurrences can lead to muscles injury, body discomfort and other medical challenges. It can be tough to prevent but it is important for employees to have mental focus on what is going on around them.

(5). Falling Objects Injuries:

Objects that descend from a slope or are plunged/dropped by someone, can lead to serious injuries. Common consequences of such is head injuries. To curb this, employees need to be diligent. Also personal protection like wearing of helmet can keep the employees safe.

(6). Falling from Heights:

This is the type of fall from a lifted or raised areas like roofs, stairways and ladders. Slip and fall accidents or faulty equipment can be the reason of its occurrence. It can be minimizing by using proper Personal Protection Equipment (PPE), training and diligence of employees.

(7). Machine Entanglement:

This type of injury mostly take place in industries using heavy equipment and machinery. Clothing, shoes, hair, etc. are some of the responsible factors. Using protective equipment and concentration of attention to personal details are needed or required to avoid these type of incidents.

(8). Vehicle Accidents:

Employees who are employed as drivers are frequently injured in automobile accidents; some of which can be terminal or fatal. These occurrences can likely be minimizing if employees are involved in safe-driving policies training.

(9). On the Job Violent Act:

Office politics and other disputes or quarrels are some of the factors responsible for job violent act. This has led to serious physical injuries. Employees' training, diligence and vigilance for questionable or doubtful activities can help to curb these type of incidents.

(10). Overexertion Injuries:

These are injuries connected to holding, lifting, pulling, pushing, carrying and throwing activities at workplace. It is one of the very serious type of injuries. Concentration of attention are preventive measures against these type of injuries.

Some Common Causes of Workshop Accidents.

According to Safety Partners Limited, some causes of workshop accidents include the following;

(1). Shortcuts:

Most humans are habitually unwilling to do work, hence, accepting shortcut is quite common exercise in all walks of life, not necessarily work alone. Notwithstanding, when workers accept shortcuts at workplace, particularly when they are working with hazardous machinery, they are only exposing themselves to unrealized great trouble or destruction. Simply, shortcuts increase one's risk of injury, or worse, or death.

(2). Poor Lighting:

Insufficient lighting is the primary cause of a number of accidents each year. It is usually looked down upon, when efforts are being made to prevent the occurrence of accidents in the warehouse or workplace.

(3). Neglecting Safety Procedures:

This is presumably the most deteriorating thing that a worker at any level in the organization can do. Intentionally neglecting safety rules and regulations doesn't only endanger yourself, but also endangers your co-workers as well as the organization at large.

(4). Lack of Preparation:

The effective method of showing the best way to perform a task in a safety and efficient manner is Job Hazard Analysis (JHA). When employees start a task without carefully and thoroughly considering the process beforehand, they are moving towards failure. Be sure you plan your work, then work your plan.

(5). Fatigue:

Working without a break is another major cause of accident. In order to regain energy exhausted due to difficult manual labour, it is very necessary that employees take adequate break. Refusal to do so may result to some physical issues including general exhaustion.

(6). Overconfidence:

It is one thing to be confidence and another thing to be overconfidence, confidence in a task, connotes expression or feeling of certainty, which is usually a great quality to possess. When workers employ overconfidence in an assign task, they are engaging in attitudes that leads to improper procedures, methods and tools while working.

(7). Poor or Lack of Housekeeping:

In quest to eschew accident in workshop, housekeeping is of paramount importance. It is one of the most correct indicator of organization's position regarding production, quality and safety of workers. Areas that are deficient in proper hygiene leads to hazards. Good hygienic environment is a function of good standard for everyone to follow.

(8). Starting a Task Before Getting all Necessary Information:

The fastest way of getting a job well done, is by having it rightly done at the first time. Having prior information concerning the task you will be executing is a clear indication that the task could be rightly done at the first time. Workers who start a task with half the information needed to start the task, are essentially doing the job while blind.

(9). Mental Distraction:

Workers who allow mental distractions from their personal life to affect their performance at workplace does so at a great risk, as it negatively affect their emotions and moods. They may become unaware of their surroundings and less safe. They will also become less productive and as such, costing the organization's time and money.

Consequences of Accidents.

The following are some of the consequences of workplace accidents;

(1). Exorbitant spending of time and money for investigation.

(2). Reduction in employees' enrolment.

(3). It can lead to loss of any part of employee/employer's body.

(4). It causes destruction to workplace environment and items of esteemed value.

(5). It can lead to loss of industry's reputation and moral/ethical codes.

(6). Gradual worsening of the entire aim of the industry/workshop.

(7). It can lead to loss of job.

(8). It can shut-down the industry/workshop for days, weeks, months or indefinitely.

(9). It can lead to loss of life

(10). It can lead to excessive cost of repairs of workshop tools, equipment and machineries.

Safety.

The sixth edition of Oxford Advanced Learner's dictionary (2000) explained safety as "the state of being safe and protected from danger or harm". Safety is also synonymous to "freedom from the occurrence or risk of injury, danger, or loss". It is the duty of every organization to be sure that their workers are safe by applying industrial safety methods in workplace. Safety is of utmost importance and it is the responsibility of everyone. Everybody must be familiar with the safety procedures and the rules to be obeyed. First aid kits and fire extinguishers must always be available and stored at locations visible and easily reachable. A safe work environment is not always enough to control all potential hazards. You must be very cautious and work safely. Safety rules help you control your and other's risk of injury or death from workplace hazards.

General Safety Rules and Regulations in Workplace:

The first line of defense against accidents occurrence is proper safety procedures and equipment. Among others, the following are general safety rules and regulations which employers must ensure that their employees follow while in workplace.

(1). Never work alone in the workshop. Work at least in pairs. This is so because in case of industrial/workshop accident, the other partner will be a helper. It is all about teamwork.
(2). Think about what you are doing. Think before you start a job and during the entire time you are doing it. Remember that your own personal caution is of more value to you than all the safeguards that can be set up.
(3). Know where the main switch is. This stop processes immediately should anything go wrong in the industry.
(4). Smoking and carrying matches or naked flame by employees is prohibited in and about the complex except in zones specifically designed for such purposes. Safety sections must see that "NO SMOKING" signs are placed in and about their areas to warn the employees and visitors.
(5). When work is being done which requires the wearing of a safety belt, the supervisor in charge shall determine whether or not stand-by personnel are required, and if necessary, will provide suitable personnel.
(6). Anyone working at or going to any plant area in the complex must wear a safety shoe.
(7). Always use a safety belt when working at height such as on stacks or column where the danger of falling exists.
(8). Do not tamper with or attempt to repair equipment or instruments which you do not understand.
(9). Ability to communicate with the outside world, very important. This is actually achieved by the installation of telephones. Important phone numbers should include the following in emergency cases;

a. Fire Service number
b. Ambulance number
c. Police number
d. NEPA/PHCN number

(10). Defective tools are dangerous. Do not use them. In fact, never use a tool except for its proper purpose.
(11). Metal ladders may not be used for electrical works and must not be use near electrical circuits or equipment.
(12). Machines must be rendered inoperative by the removal of fuses or locking out of moving parts. Replace guards before equipment is put back in operation.
(13). Provide a First Aid Box.

(14). Protective valve cap must be placed on all cylinders at all times when not in use or in transit.
(15). Guard may not be removed from equipment while it is in operation and equipment must never be operated with guard removed.
(16). Goggle or shield must be used when working on emery wheels, using wire brushes, clipping, etc. or any other circumstances where eye hazards exists.
(17). Only authorized employees from the electrical section may operate switch gear, apart from routine stopping and starting of motors and lighting.
(18). When electrically-driven equipment is shut down for repairs, the electrical sections must be isolated before commence.
(19). All injuries must be reported immediately by completing the official "Accident Report Form". No employee who is feeling ill or suffering from aftereffects of injuries or illness should be permitted to report to work, without the doctor's permission.
(20). Make a close safety inspection of the work area before a job is undertaken whether or not the related equipment is company owned, operated or maintained.
(21). Avoid carrying tools and materials which will prevent reasonably free use of the hands in going up or coming down ladders or structures.
(22). Keep your hands off machinery that you are not operating or repairing.
(23). Employees must not be permitted to use any make shift apparatus of any type which involves the use of compresses air, gas, steam, gasoline or electricity without the approval of his supervisor.
(24). Before turning ON electricity, steam, gas or water, or setting in motion any machinery, equipment, investigate to be sure that no one is in a position to be injured.
(25). Report all leaks of any nature and size at once. Be at alert for defective and dangerous runways, railways, ladders, cables, switches, pressure gauge and the absence of safeguards. If any unsafe act/practice/condition is seen, it should be corrected or reported by the employee immediately.
(26). All ropes should be tested before trusting your life to them.
(27). Special care must be taken in the dismantling and erection of scaffolds and handling tools and materials to and from scaffolds or other elevated work levels. Warning signs should be placed at the ground level that would indicate that work is being done overhead. Arrange tools and/or any materials on scaffolds and other elevated places or work in such a position to prevent them from falling and injuring people below.
(28). Pressure must be released before repair work is started on lines, vessels, pumps, etc.

(29). The use of gasoline for cleaning purpose of any nature is prohibited. A cleaning solvent should be use in cleaning orifice meters, instruments and electrical motors.
(30). All stairways, platforms and walkways must be kept clear at all times.
(31). Rubber gloves and eye protection materials must be used in the handling of acids, caustic and bactericides.
(32). The use of propane or other hydrocarbon product to shrink posts by chilling is prohibited. When a shrinking agent is needed for shafts or pins, dry ice, liquid nitrogen or carbon dioxide may be used with adequate precaution.
(33). In area where hydrogen sulphide, carbon dioxide or other toxic gases are encountered, the supervisor will determine when and under what conditions, gas mask will be worn. Employees entering tanks or other confined places must have the approval of the supervisor and he will determine the safety precaution that must be taken.
(34). Wear no loose hanging garments. Wear smart fitting overalls if possible. No dangling ear-rings, necklaces, chains, watches, etc. as things lie long-ties may get into the machine and in the process of trying to free it, the operator may find him/herself trapped in the machine.
(35). Ensure that you wear protective helmets, steel-capped boot, hand gloves, goggles (shields) and other protective wears as the workshop demands.
Source: Charles Blog (2008): Safety Management, Safety Tips.
Retrieved from www.chsafety.blogspot.com

Conclusion.

Increasing self-esteem, responsibility and autonomy, as well as income, which is the primary reason why most people work are some of the enclosed benefits of employees. There are however unfavourable consequences associated with work too. Preventive measures against the occurrence of accidents cannot be overemphasized. Some common types of workshop injuries, causes of workshop accidents as well as general rules and regulations in the workshop has been exhaustively discussed.

Recommendations.

(1). The government should create and put into practice, a thorough/comprehensive plan for overseeing work-related injuries and illness sustained by workers and for overseeing the hazards to which these workers are exposed.
(2). Resources should be distributed to the suitable agencies to put into practice the components of such a plan that are not currently funded.

(3). Periodic surveillance work should be embarking on, to identify the work-related injuries and illness sustained by helpless or unguarded workers.
(4). It should be ensured that specialist who provide health services received training regarding health and safety.
(5). A surveillance component should be developed so that schools with work-based learning programmes can trace and examine injuries sustained by students in job placement.

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