

# A Review of Safety Procedures and Guide Lines in Manufacturing Workshop

Abubakar Buhari<sup>1</sup>, Umar Abubakar<sup>2</sup>, Hassan Tukur<sup>3</sup>

<sup>1</sup>Department of Mechanical Engineering  
Tianjin University of Technology and Education (TUTE)  
Tianjin, P.R. China

**Abstract:** Manufacturing is a key tool in the aspect of engineering as well as development. It is the process were by designed products are converted into physical/solid component, with the aid of hand and machine tools. The production processes are mostly carried out in the work shop. During this processes, manufacturers or machine operators are faced with a lot of hazards, due to the direct or indirect contact with the work pieces or machine tools. This paper intends to review some basic precautionary measures and formulate them into DOs and DONTs which if obeyed can eliminate or minimize this risk, and to serve as an orientation paper to technical students who may have the course to perform practical /training in the manufacturing workshop. The DOs and DONTs as well as the negative consequences (implications) were highlighted under four topics (Mental and physical acuity of worker, protective equipment and clothing, state of the workshop and environs, and operations / working habits).

**Keywords:** Safety, Hazard, Do's, Don'ts, implications.

## 1. Introduction

According to Wikipedia, the free Encyclopedia, safety is the state of being "Safe", the condition of being protected against physical, social, spiritual, financial, political, emotional, occupational, psychological, educational or other types of consequences of failure, damage, error, accidents, harm or any other event which could be considered non desirable . It is also an act of control of recognized hazard to achieve an acceptable level of risk free [1]. Safety in a workshop can be expressed as an act of eliminating all known hazard related to a particular job. Each job regardless of the type of work involved presents problem that requires special alertness, awareness and good judgment on the part of the worker, therefore, there is the need for full compliance with the requirements of the site where work is performed. It is therefore an obligation of a worker to review all safety hazards present and establish additional practices needed to minimize them, and also try to understand how each task is to be done in a safe manner and to correct any unsafe acts, practices and/or conditions for the protection of him and others.

Safety first; prior to beginning any task, it is important to understand and consider all of the potential risk of that task at hand and the necessary precautions to maintain safety. This can be accomplished through a Safety Task Assessment (STA), i.e. an explanation of safety precautions and actions that must be taken before preceding a task, usually given to a person that is to carry out a new or repetitive job, by his supervisor [2]. Generally speaking, all tools are dangerous when used improperly or carelessly. Working safety is the first thing a machine operator should learn because the safest way is the most appropriate way of doing things. A person learning to operate machine tools should first learn the safety regulations and precautions for each tool and machine, and equally learn to apply safe work habit in order to avoid the consequences of accident, "Most accidents results from non adherence to prescribed procedures" [4]. Although, each work has some safety

procedures that are only applicable to it, however, most of the precautionary measures highlighted below are regarded as generally applicable.



## 2. Mental and Physical Acuity

Dos

- Dress properly for adequate physical protection.
- Use a leather apron, leather gloves and thumb guide when the need arises.
- Always put on protective glasses or goggles, for eye protection.
- Use earplugs or muff when carrying out hot work.
- Always put on dust mast to get protection against saw dust and microscopic particles.
- Wear protective helmets/hard hats and safety boots when entering a workshop.
- Put on welding jackets and face shield when carrying out welding job [3] - [7].

Don'ts

- Do not put on loose cloths when entering a workshop.
- Do not wear jewelry when working in a workshop.
- Do not put on rings when working in a work shop.
- Do not keep a loose hair when working in a workshop.
- Do not put on metallic watches or key chains when working in a workshop.
- Do not put on metallic hard hats and bumps when carrying out electric related work.
- Do not wear bracelets while working in a workshop [3] - [8].



#### Implication

Safety wise, loose cloths and floating hair are discouraged because they can get caught by moving tools or give way for penetration of grit and sparks. Accordingly, saw dust, smoke as well as microscopic particles that can originate from metal removal when inhaled are dangerous to health. High noise intensity can cause permanent loss of hearing, while oil spill, metallic chips and dust if mistakenly get its way into the eye can cause sight problem.

### 3. State of the workshop and environs

#### Dos

- Always keep the workshop and environs clean and tidy.
- Ensure adequate lightening in a workshop.
- Confirm the presence of fully equipped first aid box in a workshop.
- Confirm the presence and accessibility of functional firefighting equipment in a workshop.
- Ensure that a workshop is equipped with smoke detectors.
- Carefully study the workshop environment and identify all marks and symbols of hazards, emergency exits safe walk ways and emergency electric button/circuit breakers.
- Ensure that all emergency equipment and route are free from obstruction [4] - [6].

#### Don'ts

- Do not smoke within the workshop environment.
- Do not allow the environment of a workshop to be littered with oil spills, water droplets, rags and dust.
- Do not hang or lay any object that can cover emergency signs and exits in a workshop.
- Do not run cables across emergency exits of a workshop.
- Do not run electrical cables and wires close to heat source, oils spill and sharp edges.
- Avoid storing food or any eatable things inside a workshop [4] - [9].

#### Implication

A dirty environment is usually unfriendly, as it harbors lots of hazard. Oil spills makes floor slippery thereby causing falling accident, while unnecessary running of electric wires and cables can equally makes one to fall down or create shock when contact is made with a naked point. Accordingly, smoking in the workshop can cause fire incidents, while inadequate lightening may lead to injuries to the worker or make all emergency points and exits inaccessible.

### 4. Operations/work habits

#### Dos

- Be gentle and systematic in handling hand and machine tools.
- Cultivate the habit of checking to see that everything in a machine is in order before turning it on.
- Always examine potential risk as well as safety guide lines attached to any machine before attempting to operate it.
- Always stop a machine before cleaning it or taking measurement from a work piece.
- Always ensure that all machine guards are put in position before operating [3] - [9].

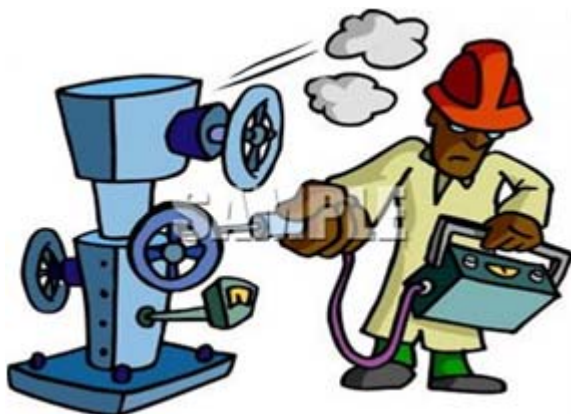
#### Don'ts

- Avoid horse play or any form of reckless behavior in a workshop.
- Do not operate a machine you don't have much knowledge about it or how to stop it on emergency.
- Do not lubricate a machine while it is running.
- Do not manage unsafe working tool or operate a faulty machine tool.
- Do not work alone in a workshop [4] - [9].

#### Implication

Generally, managing a faulty machine tool is the beginning of failure, as it leads to damaging of work tool, work piece or causing accident. Reckless behavior is a very bad attitude and its result is usually disastrous. It is

highly discouraged to work alone in a workshop, because there is the need for assistance in an event of any incident.



## Author Profile

**Abubakar Buhari** owns a degree in Mechanical Engineering from Bayero University, Kano (B.U. K), Kano State of Nigeria, in 2005. Currently undergoing a masters Degree programme in Mechanical Manufacturing and Automation, at Tianjin University of Technology and Education (TUTE), Tianjin, P.R. China, (2011-2014)

## 5. Conclusions

Safety is the most important thing to consider before commencing any engineering work. The knowledge of safety reduces the vulnerability of engineers and technicians at their places of work. The paper tries to summarize safety procedure as regards to manufacturing workshop, in its general terms. Though as mentioned earlier each type of work has its peculiar risk, but there are some precautions that are applicable to all jobs in a workshop. Therefore, the summary was drafted and simplified for better understanding and easy comprehension, particularly to the new hands in a workshop.

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