

Hazards and Preventive Measures in Fabrication Industries

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Abstract— India is one of the fast developing industrialized countries. Engineering Industry is an important sector of Indian economy. It also provides job opportunities to lakhs of workers. Over the years industrial Accidents in the Engineering Industry have affected many workers and their family members, who have suffered due to injuries or loss of life of their dear ones. In Trichy were BHEL – Bharat Heavy Electricals Limited is located nearby lot of fabrication industries are placed and in operation. This paper deals with visit to small scale fabrication industries, determining the hazards, surveying past records of accident, evaluation of safety parameters at the industries, conducting survey of workmen and providing appropriate recommendations towards safety measures to minimize health hazards and safety accidents in fabrication industry.

Key words: Evaluation of Safety Parameters, Hazard Identification, Preventive Measures, Occupational Health, Safety Audit

I. INTRODUCTION

Bharat Heavy Electricals Limited, owned by Government of India, is a power plant equipment manufacturer and operates as engineering and manufacturing company based in New Delhi, India. BHEL – Trichy manufactures pressure parts and seamless tubes as final product. By getting support from BHEL Lot of small scale fabrication industries are located nearby. They use to manufacture pressure parts, pipes and tubes. These fabrication industries employees are exposed to multiple hazards.

II. SCOPE

This paper covers the hazards and preventive measures to be implemented in fabrication industries to prevent accidents and health issues among the employees and workmen. This has scope in all fabrication industries to prevent accidents and to lead with good productivity.

III. OBJECTIVE

“The main objective of this research is to reduce the exposure to hazards present in the fabrication industries to minimize the occupational disease and to prevent accidents

- To identify the work area where welding, grinding, cutting, brazing, or forming metals, fabricators face multiple personal hazards.
- To conduct survey on past accident / health hazards due to the work environment
- To conduct safety culture survey to staff and workmen present in the fabrication industry.
- To analyze and to provide appropriate preventive measures to minimize health hazards and injury in the workplace.

IV. METHODOLOGY

The following method was adopted to achieve the objective of this research.

- Studied fabrication industry policies, work method, method statement
- Studied previous injury records
- Conducted safety culture survey with sets of questionnaire
- Inspected various places of the workplace and identified hazards present
- Studied safety procedure followed at the industry
- Discussed with all employees, and workmen

V. RESULTS AND DISCUSSIONS

The following points are results of the above methodology

- Most of the incidents are happened due to not taking CAPA – Corrective Action and Preventive Action
- Some of the work has been deviated from Safe Work Method Statement resulting in injuries to workmen
- Injuries happened due to failure in implementing preventive measures
- Physical hazards like transportation hazards, manual handling, harmful energy sources like electricity noise and vibration are causes of major injuries
- Chemical hazards like inhalation of fumes, gases are causes of some health hazards
- Psychological hazards like excessive work load, increased work time, lack of communication and physical violence are causes of some stress, anxiety, fatigue and depression.

Below are the recommendations discussed to improve Safety at workplace.

A. HIRA – Hazard Identification and Risk Assessment:

- Before starting any activity, concerned engineer along with safety personnel, supervisor has to prepare Risk Assessment which clearly mentions the hazards and control measures that required for the specified activity.
- Risk assessment should be communicated to all supervisors and workmen who are all engaged for the activity.

B. Competence Training and Awareness:

- To ensure that any person who is working for the organization which impacts on EHS Performance are competent enough to perform the job on the basis of education, training and experience.
- Screening selection and induction for employment.

- Awareness should be created among workers on emergency situations, behavioral based safety, tool box talks etc.,

C. Safety Performance Measurements:

- Safety Inspection: Regular safety inspection to be carried out at site to measure the implementation status of safety aspects.
- Upward Communication from workmen: All workmen should be motivated for communication of hazards at workplace, which may reduce the likelihood of accidents at workplace.
- SCOPE Award: Safety Conscious Person Award shall be introduced to motivate the workmen towards good EHS Practice at workplace.
- Safety Audit: Audit shall be conducted once in six months to evaluate the implementation of safety system of the organization and for changes with continual improvement.

D. Near Miss Incident Investigation and CAPA:

- All the incidents shall be investigated and the purpose is not to find the fault, it is for learning and to implement Corrective Action and Preventive action.
- Learning outcome shall be communicated to all to prevent further incidents

E. Transportation and Manual Handling:

- All equipments entering site shall undergo equipment fitness certificate from site engineer along with safety person before deploying
- Separate pedestrian walkway shall be provided to prevent any incident
- Manual handling persons should be trained with way of handling material and load of weight a person shall lift. Only trained person shall perform manual handling of materials.
- Use of material handling devices like pallet, fork lift, cranes shall minimize the manual handling hazards.

F. Electricity, Noise, and Vibration:

- All tripping device shall be checked twice in a month frequency
- Earth resistance value shall be checked once in a month and the date shall be displayed with next checking date.
- Noise level at industrial areas shall be frequently checked using sound level meter.
- Job rotation and minimized working time shall be maintained as administrative control while working near noisy area.
- Introduction of acoustic enclosures at noisy area shall minimize the exposure of other persons.
- Vibration pads may be used for all vibrating tools like drilling machine, hammer, chipping machine.

G. Chemical and Psychological Factors:

- All welding activities in fabrication industry is static, hence Local exhaust ventilation shall be

placed inside the premises to minimize inhalation or ingestion of fumes and gases.

- Motivational, team work, appropriate working hours, recreation at evening time these all can reduce the psychological factors at workplace

VI. CONCLUSION

Fabrication Industries is an important sector of industrial economy which has various hazards at workplace. A survey has been made in a small scale fabrication industry to evaluate the safety practices and hazards present. Suggestions are made for Preventive measures towards the hazards present in the fabrication industry that shall be adopted to minimize the exposure to hazard which leads to an increased productivity with reduction in cost.

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