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ACCIDENT / INCIDENT REDUCTION BY IMPLEMENTING OF ZERO INCIDENT PROCESS IN CONTRACT LABOUR MANAGEMENT

S. Murphin* & K. Mugundhan**

* PG Scholar in Industrial Safety Engineering, Knowledge Institute of Technology, Kakapalayam, Salem, Tamilnadu

** Assistant Professor, Department of Mechanical Engineering, Knowledge Institute of Technology, Kakapalayam, Salem, Tamilnadu

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Abstract:

Contract labour generally refers to "Workers employed by or through an intermediary on work of any establishment". Such labour can be distinguished from the direct workers in terms of employee-employer relationship and the method of wage payment. The contract labour does not have any direct relationship with the principal employer. It has a distinct way of working unlike in any other classes of labour like permanent, temporary, casual etc. The contract labour system is based on triangular relationship between the user enterprises, the contractors including the sub-contractors as middleman, and the worker. The workers are recruited by an outside agency or person and are supplied to an establishment or engaged on its work. Unlike direct labour, they neither feature on the muster roll of principal employer/ establishment nor are paid directly.

1. Introduction:

ZIP is a process that gives a workplace the genuine opportunity to reach the goal of Zero Incidents. It is a psychologically based safety process that moves your people from extrinsically driven safety to intrinsically motivated safety. It does this by focusing on the Person component of the Safety Culture Model.ZIP is designed to empower people to take control of their personal safety by becoming more effective within the systems they work in. These systems are made up of the Practices and Environment component of the Safety Culture Model. ZIP does this by giving people insight into the way their brain works, their thinking, their attitudes and how this drives their behavior. It gives participants the tools to take control of their thoughts and feelings, and thus the results they get in life, especially regarding their safety. While ZIP moves Safety Culture change from BBS to the more mature CBS, it is designed to work alongside and enhance any BBS initiatives that are already operating in your business. It fills in the gaps between where your safety performance currently is and where you want it to be. It moves a step beyond BBS to the underlying psychological causes of behavior – thinking and feeling. This is what people refer to as the 'hearts and minds' of safety. ZIP can enhance your Safety Culture regardless of where your business is on the journey to Zero Incidents. Importantly, it provides maintenance tools to facilitate the continued journey toward excellence. There is no way a company could write a policy or put a guard in place for every possible risk in their business. What keep a person safe most of the time is their skills, knowledge and attitudes towards safety. The link between safety attitudes and safety performance is well documented and is the focus of ZIP.

Problem Identification:

The major problems identified in handling Contract labours are

- Floating manpower's.
- Lack of process and work knowledge.
- Not following of standard operating Procedures
- Non-usage of Personal Protective Equipment's.
- Deficiency Supervision
- Work Permit violation
- Extended Overtime and Duty Hours.
- Poor Material Handling.
- Falling from the height
- Work Pressure
- Not aware about emergency preparedness.
- Unauthorized machine Area Entry.
- Unauthorized Operating equipment's
- Non-Providing of Induction Training and Regular Training.

2. Zero-Incident Performance (ZIP) Process:

Figure 1: Process Flow Diagram

Through leadership, assessment, training, coaching and communication support, The Safety Services facilitates

sustainable safety performance at levels never thought possible. It will help facilitate dissatisfaction with the status. As soon as leaders throughout the organization begin to recognize and believe why working safely is no less important than meeting production goals, the ZIP Process helps shape a strategy and tap into your most powerful catalyst of all: involvement. Wherever you are in your safety-culture journey, the ZIP Process is the formula that allows you to hit the ground running. Once the strategy is cast and milestones are determined, your internally led teams can choose between accelerated hyper-focused safety continuous improvement events or periodic coaching throughout the year. Either way, you can be sure that you will get the best support and assistance.

Six Steps in ZIP Process:

- Engage
- Assess.
- Build.
- Develop.
- Implement.
- Check.

Engage Leadership: Introduce Zero-Incident Performance principles in a Safety Culture Leadership Roundtable. Get commitment from the top management to implements the process in to work area.

Assess the Culture: Assess the health of the culture with the Safety Perception Survey and Qualitative Interviews. Communicate the findings that drive the strategic plan. Identify the milestones to create traction and ensure progress

Build the Plan: Set the foundation to carry out the vision; establish the structure to elevate safety management processes; build involvement, overcome deficiencies, and drive systems of accountability.

Develop the Processes: Form Continuous Improvement Teams to arrive at the specific tactics to advance high-priority processes. Timelines, milestones and the beginnings of a safety accountability system are being put in place.

Implement the Processes: Continuous Improvement Teams deliver the outcomes: what needs to improve and how. Processes developed by the Continuous Improvement Teams will be tested, then fully implemented.

Check the Processes: Ensure sustainability. An Evaluation Team observes and reports on each focus area, evaluates revised processes, and identifies potential shortcomings.

3. Literature Review:

In this section, we discussed various papers related of accident prediction using learning model based on the derived safety checklist. J. Vasara., (2008), published a paper on the title, “Occupational Safety in Shared Industrial Workplaces”. This paper briefs that the show that the good practices in different phases of the operations have similarities. A repetitive topic in all four categories is commitment to the safety work, co-operation and flow of information. S. Kanchana, P. Sivaprakash., (2015), published a paper on the title, “Studies on Labour Safety in Construction Sites. The construction industry has become more dangerous. Construction industries are faced with the challenge of having close monitor of their labour safety management systems to minimize occupational hazards. P. Agnello, S. Ansaldi., (2009), published a paper on the title, “Studies on Labour Safety in Construction Sites. The construction industry has become more dangerous. Construction industries are faced with the challenge of having close monitor of their labour safety management systems to minimize occupational hazards. Surendra Bhattacharjee., (2009), published a paper on the title, “Safety Facilities in the Paper Mills under a Public Sector Enterprise in India– A Case Study.”This Paper speaks about safety facilities provided to the employees in the Paper Mills under Hindustan Paper Corporation Limited are at par with the statutory requirements whether there exists a high level of satisfaction amongst the employees.

Dennis K. Neitzel., (2016), published a paper on the title, “Electrical Safety Inspections in Industrial Facilities. This Paper speaks abouteffective management of worker’s safety, which includes electrical safety inspections, was a decisive factor in reducing the extent and the severity of work-related injuries. Management ultimately bears the burden of effectively administering an electrical safety inspection program. Yin Wang, Fletcher Griffis (2018) published a paper on the title, “The Theory of Zero Incident Safety Management. This paper mainly developed an approach, Zero Incident Safety Management (ZISM), to answer the question "How can construction leaders employ the theory of Zero Incident Safety Management to improve safety performance to achieve the goal of Zero Incident. Murat Gunduz1, Heikki Laitinen (2017) published a paper on the title, “Construction safety risk assessment with introduced control levels. This paper mainly developed an Occupational health and safety management is based on the assessment of workplace conditions for possible risks. Risk assessment can be done by using different risk assess¬ contribution.

Bo Yanl, Chengqi Xue published a paper on the title, “The Application Study of Ergonomics on Forklift”. This paper mainly developed Ergonomics, form design and color design are the important constitute of forklift design. Based on the analysis of current status of international and domestic forklift form design, using industrial design theory and methodology. Bruce Mahan, John Morawetz (2013) published a paper on the title, “Workplace Safety and Health Improvements through a Labor/Management Training and Collaboration. This paper mainly developed positive changes can happen with bold leadership cooperation between labor and management and site-specific worker-centered training of all hourly plant employees and all managers. Youhee Choi, Jeong-Ho Park, published a paper on the title, “Developing safety checklists for predicting accidents” In this paper, we can identify major risk features and accident types from the past shipbuilding fatal accident cases and then derived safety checklist by analyzing characteristics of accidents. Finally, we can evaluate results of accident prediction using learning model based on the derived safety checklist

4. Upcoming Zip Projects:

Selection of Manpower:

- Contract worker should have experience in providing services for a minimum of 3 years in respective field.
- Worker has minimum knowledge to read the Rules and Safety information

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- Minimum Knowledge about Health, Safety, Environment and Quality
- Past track record of similar works executed with list of work orders.
- Experience of working in similar kind of project.
- Previous Accident and incident experience.

Induction and Process Training:

- Good induction training gives to the employee and focuses on clarifying all his safety doubts about the organization and his job.
- It ensures that the new employee feels comfortable in the organization.
- It also makes him feel that he is respected and valued. This motivates the new employee greatly.
- A comprehensive induction training program helps the new employee get all the necessary information about the company and machineries
- By this the worker can understand the Safety culture, Safety work norms, Safety policies and Safety procedures of the organization.
- New employee is introduced to his direct supervisor, other employees, leads, and directors of the organization

Standard Operating Procedure:

While working in the factory, people do not bother for safety rules, but no sooner accident occurs, they admit and understand that safety has got the first and foremost place. The workers are trained for following safe practice.

- Always use tools, which are in proper good working condition
- Keep your work place clean and arrange things in their proper place & order
- Know the know-how of the machines and before operating the machines, get yourself acquainted
- Kept the safety guards in proper position
- Follow permit to work system while carrying out maintenance work
- Observe safety rules/precautions strictly
- Keeping in view the requirement - use safety boots without nails, helmets, safety belts, goggles, nose mask, hand gloves etc., as and when required
- Keep your officer concerned informed of the situation in case you feel any danger without any delay
- Improving Supervision:
- Supervisor on site includes assessing various safety hazards and determining the likelihood of an accident occurring.
- Supervisor must involves conducting regular inspections to make sure everything is as it should be, which will involve looking for and fixing any hazards.
- Supervisor must to knows how to work safely and without risk to their workers' health.
- Supervisor who is working on the site, and it is your responsibility that everyone knows of all potential safety hazards.
- Supervisor is the only responsible Worker PPE issuing and replacing the damaged PPE.

Duty Hours and Timing:

- Fatigue is one of the leading causes of workplace accidents, so it should come as no surprise that excessive overtime leads to a higher number of accidents and injuries suffered at work.
- One study revealed that workers are three times as likely to be involved in an accident after working 16 or more consecutive hours.
- Fatigued workers are less attentive and more prone to making mistakes that can lead to serious injury or fatal accidents
- Among those health problems are the following because of over time
- Body injuries
- High Blood Pressure
- Mental Health Problems
- Higher rates of on the job injuries

Awareness about Emergency Preparedness:

- Informing workers, public in vicinity, surrounding factories, etc. regarding any emergency which may occur
- Arrangement for evacuation of persons likely to be affected due to emergency
- Arrangement for transferring persons affected due to emergency to the hospital and medical care center
- To ensure about necessary treatment and availability of antidotes at medical center and hospitals
- Organization chart for fixation of responsibilities of different persons at different stages for handling emergency due to fire, explosion or toxic release
- Details relating to alert system
- Arrangements to create and maintain awareness and emergency preparedness in personnel handling emergency by making provisions of training, mock drills etc. at regular interval
- Submission of map of the area showing the approach to the factory, location of emergency facilities such as hospitals, police, and fire services, etc

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- Notification of place of gathering of workers and staff at the time of emergency
- Controlling the fall hazards
- Falls are the leading cause of fatalities in construction, accounting for nearly 40% of all worker deaths.
- Workers should familiarize themselves with all potential fall hazards on a job site.
- Never work in an area where fall protection systems have yet to be installed.
- Workers using personal fall arrest systems should inspect them before each use to ensure they are working properly and are free of damage
- Workers should be able to recognize the hazards of falling and know the procedures to follow to minimize hazards and prevent falls.
- A competent person is required to provide training to all employees that might be exposed to fall hazards.
- Topics of the training program should include the nature of fall hazards present on the construction site, proper erection, inspection and maintenance of fall protection systems.
- Use of fall protection systems and personal fall arrest systems and the role of the employee in safety monitoring and the fall protection plan.
- Employers are also required to maintain certification records of fall protection planning for all employees.
- Fall protection can include guardrails, safety net systems and personal fall arrest systems.

Figure 2: A Fall from height

Periodical Health Checkup:

- Medical examination is linked to gate pass issuance system of security.
- Stamp of OHC confirming the fitness is must on gate pass form to process gate pass.
- Gate passes only for six months.
- Food handlers, at the time of recruitment & annually
- Medical staff, at the time of recruitment & annually.
- Drivers & crane operators at the time of recruitment & annually.
- Any person being recruited
- Employees >40 years of age annually
- For rest of employees not included above once in two years.

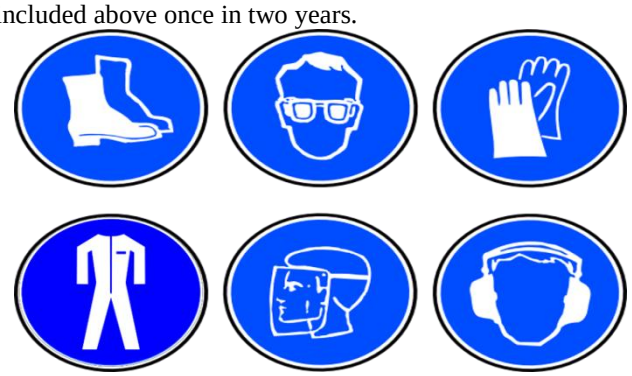

Figure 3: Personal protective Equipments

Personal Protective Equipment's:

- PPE are protecting workers several hazards such as falling and flying objects, electrical shock and other impacts.
- Workers are required to wear required protection wherever there is the potential for being struck in the body.
- The Correct PPE has to given based on the activity
- Employers are responsible for providing all employees with head protection that meets consensus standards outlined.
- Employers are not allowed to charge employees for the cost of PPE
- PPE should be kept in good condition and be replaced immediately if they suffer a heavy blow or electric shock.

Training:

- Training means helping people to learn how to do something, telling people what they should or (often as important)

should not do, or simply giving them information

- There are many ways in which training can improve performance and reduce the risk of injury.
- Any ways that a lack of proper training can spell disaster. Following are some of the ways the adequacy of training can be tied to the risk of injury.
- While on the job training is an valuable educational tool,
- Meet your legal duty to protect the health & safety of your employees.

5. Conclusion:

From the above discussed report, we conclude that the contract labour safety management plays an important role in any safety measures inside and outside the company. By implementing ZIP process training, awareness meetings, precaution measures and other important safety managements were undergone to avoid the major and minor accidents which a contract employee basically needed in their work area. These reported ideas and information will minimize the accidents in the future and soon will completely vanishes accidents in the company.

6. References:

1. Masayuki Tanabe, Atsumi Miyake "Approach enhancing inherent safety application in onshore LNG plant design" (2010).
2. Chen Xin, Cui Bin-Ge, Zhang Feng, XU Xue-hui, FU Shan-shan, "A Model of Workflow Composition for Emergency Managements"(2012).
3. Richard Oloruntoba, "An analysis of the Cyclone Larry emergency relief chain: Some key success factors" (2009).
4. Aiping Tang, Aihua Wen, "An intelligent simulation system for earth quake disaster assessment", (2008).
5. R. K. Gangopadhyaya, S. K. Dasa, M. Mukherjeeb, "Chlorine leakage from bonnet of a valve in a bullet-a case study" (2005).
6. M. Abbaspour, N. Mansouri"City hazardous gas monitoring network" (2005).
7. G. L. L. Reniersa, B. J. M. Aleb, W. Dullaertc, B. Foubertd, "Decision support systems for major accident prevention in the Chemical process industry: A developers" survey", (2006).
8. I. M. Dokas, D. A. Karras, D. C. Panagiotakopoulos, "Fault tree analysis and fuzzy expert systems: Early warning and emergency response of landfill operations", (2008).
9. Ayse I. Parlaka, James H. Lamberta, Thomas M. Guterbockb, Janet L. Clementsc, "Population behavioral scenarios influencing radiological disaster preparedness and planning", (2012).
10. Shailendra Bajpai, J. P. Gupta "Site security for chemical process industries", (2005).
11. Masayuki Tanabe, Atsumi Miyake. "Safety design approach for onshore modularized LNG liquefaction plant (2010).