

An Evaluation of Safe Work Practices of Workers using “Behaviour based Safety Approach”

Abhishek Kumar Singh¹, Dileshwar Kumar Sahu²

¹M. Tech. Student, Department of Mechanical Engineering, Bhilai Institute of Technology, Raipur, India

²Assistant Professor, Department of Mechanical Engineering, Bhilai Institute of Technology, Raipur, India

Abstract: With increase in the risk on safety, more and more we need to look at new approaches to achieve safe and healthy workplaces. We need to apply the learning from the many years of analyses of accidents and ill health because this will contribute to future prevention strategies and activities. Behavior Based Safety (BBS) is an approach that can be applied successfully. Behavior Based Safety is gaining more interest across industry sectors globally and has the great advantage of needing the involvement of the individual employee, in addition of course, to employer commitment. It is quite often that an employer experienced situations in which an employee’s competence in a work process is assessed at the point that they leave the training room with the assumption that, once learned, the process will be applied correctly and safely. This fails to take account of the many factors that influence and reinforce learning and behaviors. BBS addresses these factors. A Behavior Based Safety approach is being carried out to evaluate employee attitude towards safe work practices in petrochemical extension project in India. Technically, a survey was conducted as a part of the project. Questionnaire comprised of 16 Questions about age, work experience, Educational Qualification and questions about use of Personal Protective equipment’s

Keywords: Enter key words or phrases in alphabetical order, separated by commas.

1. Introduction

Behavior-Based Safety (BBS) is the application of science of behavior change to real world problems. It is a process that creates a safety partnership between management and employees that continually focuses people's attentions and actions on theirs, and others, daily safety behavior. BBS focuses on what people do, analyzes why they do it, and then applies a research-supported intervention strategy to improve what people do. At its very core BBS is based on a larger scientific field called organizational behavior management. To be successful a BBS program must include all employees, from the CEO to the front line workers including hourly, salary, union employees, contractors and sub-contractors. To achieve changes in behavior, a change in policy, procedures and/or systems most assuredly will also need some change. Those changes cannot be done without buy-in and support from all involved in making those decisions. BBS is not based on

assumptions, personal feeling, and/or common knowledge. To be successful, a BBS program used must be based on scientific knowledge.

2. Steps in implementing BBS approach

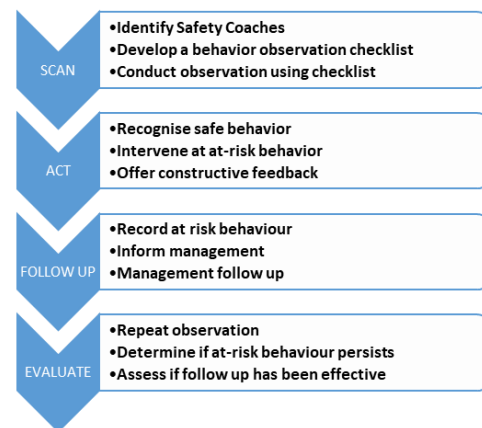


Fig. 1. Steps in implementing BBS approach

A. Methodology

This study includes an observation of workers using a BBS checklist and a questionnaire survey. This study has been carried out in a petrochemical construction project.

B. Questionnaire survey

A survey was conducted as a part of the project. Questionnaire comprised of 16 Questions about age, work experience, Educational Qualification and questions about use of Personal Protective equipment’s. Each question was provided with necessary required and respondents were asked to choose an option. Also there was a separate question in which respondents were asked to write their opinion in a descriptive manner.

3. Data collection and result

A. PPE perception survey

The survey on safety campaigns through questionnaire was

conducted targeting 10% (100 no's) of the total workforce. Various questions regarding the PPE use were asked in the Questionnaire to get genuine responses from the workers. A total number of 17 questions were included in the survey. There were yes or no questions, multiple choice questions, and subjective type questions to make the survey more efficient. The respondents were approached individually and the questionnaire was collected from them. Most of the people took time to understand and respond to all the questions. The survey was carried out successfully and the responses were recorded in excel tool. The contractors also had sound knowledge on safety related issues and awareness towards safety. This really shows how much importance is being given to safety in the company. All 100 workers participated in the survey stated that they think PPEs are necessary in the plant and all of them have been provided with awareness on safe use of PPE. But 21% of sample population was of the feeling that awareness was not sufficient. The company management conducts trainings emphasizing need of safe work practices including safe usage of PPEs. But due to the varying education level, experience level and safety perception, a small number of workers are not benefitted from training. Customized training for different category of employees and supervision can have a positive impact on this problem.

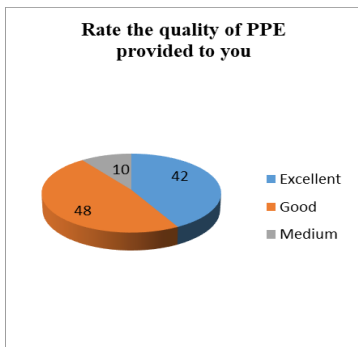


Fig. 1. Quality of PPE

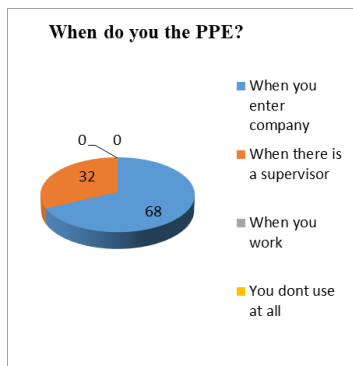


Fig. 2. PPE Use time

Based on studies carried out, around 32% of sample size stated that use of PPE reduced the speed of their work. It is also noted that 32% of the employees believe that PPE should be used at the time of work only. Employees may have used to

using of PPE at the time of work for many years and never been injured. Showing employees video or animation videos of what can happen or having someone who sustained an injury speak to the group is the most effective ways to combat this excuse. Next concern is regarding the quality rating of PPE being used. Nearly less than a half of sample size stated that PPEs having Excellent quality and the nearly half were of the opinion that they were of Good quality Employee participation in selection and buying of PPEs can have a large positive impact on use of PPE. In the population of 100, 70 stated that Safety.

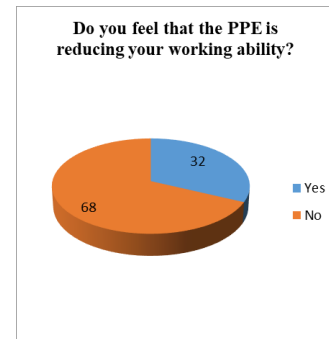


Fig. 3. PPE vs. Work ability

B. Recommendation

1) PPE usage encouragement

The use of PPE to reduce employee exposure to hazards when engineering and administrative controls are not effective. However, enforcing its use and addressing worker objections can often be challenge for employers. Following recommendations can produce a positive impact Establish and consistently enforce a policy requiring the use of assigned PPE.

- Make sure all employees are aware of the rules and the consequences of noncompliance.
- Talk about PPE when appropriate in safety meetings. Identify hazards and explain
- How specific PPE is designed to protect against those hazards.
- Ask employees to give their personal reasons for wearing PPE—for example,
- Getting home safe and sound to their families, avoiding disability or disfigurement, because it's the smart thing to do, etc.
- Ask for employee input concerning PPE. Listen to complaints and reasons for non-compliance.
- Post signs indicating what PPE is needed in each work area
- Provide statistics and descriptions of accidents that have occurred in your
- workplace or your industry because workers weren't wearing required PPE
- Make sure supervisors monitor PPE use daily among all their employees and don't
- Overlook any noncompliance on the part of any employee for any reason.

4. Conclusion

The survey was completed successfully and the people showed good participation. They took time to complete their survey and provided various suggestions to improve the existing safety system. The contractors also had sound knowledge on safety related issues and awareness towards safety. This really shows how much importance is being given to safety in the company. Based on studies carried out, around 30% of sample size stated that use of PPE reduced the speed of their work. It is also noted that some of the employees believe that PPE should be used at the time of work only. Employees may have used to using of PPE at the time of work for many years and never been injured. Showing employees video or animation videos of what can happen or having someone who sustained an injury speak to the group is the most effective ways

to combat this excuse. Trainings given to the workers should involve practical sessions and the effectiveness of the training should be evaluated after the training.

References

- [1] E. Scott Geller, "Behavior-Based Safety and Occupational Risk Management," *Behavior Modification*, Vol. 29 No. 3, May 2005, pp. 539-561
- [2] H. L. Kaila, "Behavior based safety in Indian organizations," *Journal of Health Management* Vol. 11(3), 489-500.
- [3] Frank W. Guldenmund, "The use of questionnaires in safety culture research – an evaluation," *Safety Science*, 45, 2007, 723–743.
- [4] A. Neal, M.A. Griffin b, P.M. Hart, "The impact of organizational climate on safety climate and individual behavior," *Safety Science*, 34, 2000, 99-109.
- [5] Farhang Akbar-Khanzadeh and Michael S. Bisesi, "Comfort of personal protective equipment," *Applied Ergonomics*, Vol 26, (3) 1995, 195-198.