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The Effect of Occupational Health and Safety Management on Work Environment: A Prospective Study

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Abstract: Workplace safety is a priority. It is necessary to encourage the employees in various ways in an organization. The goal of occupational health and safety system include fostering a safe and healthy work environment, occupational and non occupational safety and includes safety for activities outside of work. The main objective of this paper is to analyse the effect of OHS management on work environment and health. Research has been conducted in Nelcast Limited (NCL), Chennai among 100 samples. The qualitative research methodology is been used to find out the solution for the objective. The data are been predominantly compiled by face to face interview and based on questionnaire.

Keywords: safety, health, environment, occupational, management.

I. INTRODUCTION

Occupational health and safety (OHS) is a cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment. The goals of occupational safety and health programs include fostering a safe and healthy work environment. OHS may also protect co-workers, family members, employers, customers, and many others who might be affected by the workplace environment. The Workplace (Health, Safety and Welfare) Regulations 1992 cover a wide range of basic health, safety and welfare issues and apply to most workplaces (with the exception of those workplaces involving construction work on construction sites, those in or on a ship, or those below ground at a mine). They are amended by the Quarries Regulations 1999, the Health and Safety (Miscellaneous Amendments) Regulations 2002, the Work at Height Regulations 2005, and the Construction (Design and Management) Regulations 2007. Occupational health and safety can be important for moral, legal, and financial reasons. All organizations have a duty of care to ensure that employees and any other person who may be affected by the companies undertaking remain safe at all times. Moral obligations would involve the protection of employee's lives and health. Legal reasons for OHS practices relate to the preventative, punitive and compensatory effects of laws that protect worker's safety and health.

The EOHS of NCL provides overview of the established EOHS management system policies and linkages to the procedures. It focuses on managing environmental aspects and impact occupational hazards and risks associated with activities product services essential for manufacturing and machining process, design and development, production and supply of its products.

II. SCOPE OF THE STUDY

- Better reputation for corporate responsibility among investors, customers and communities
- Increased productivity, because employees are healthier, happier and better motivated.
- To prevent inter-office violence and raise employee awareness of the danger.

- To avoid loss of life of the employees
- To improve employees satisfaction
- To have a better cooperation with the employees union and hence to avoid conflicts between them

III. OBJECTIVE OF THE STUDY

A. Primary Objective:

- To study the employees health and safety in Nelcast Machining Division(NMD)

B. Secondary Objective:

- Better reputation for corporate responsibility among investors, customers and communities
- Increased productivity, because employees are healthier, happier and better motivated.
- To prevent inter-office violence and raise employee awareness of the danger.
- To avoid loss of life of the employees
- To improve employees satisfaction
- To have a better cooperation with the employees union and hence to avoid conflicts between them

IV. LITERATURE REVIEW

Occupational health and safety (OHS) is generally defined as the science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment. This domain is necessarily vast, encompassing a large number of disciplines and numerous workplace and environmental hazards (Algera, 1990). A wide range of structures, skills, knowledge and analytical capacities are needed to coordinate and implement all of the “building blocks” that make up national OHS systems so that protection is extended to both workers and the environment (Noe, 1986).

The scope of occupational safety and health has evolved gradually and continuously in response to social, political, technological and economic changes. In recent years, globalization of the world’s economies and its repercussions have been perceived as the greatest force for change in the world of work, and consequently in the scope of occupational safety and health, in both positive and negative ways (Pfeffer, 1994). Liberalization of world trade, rapid technological progress, significant developments in transport and communication, shifting patterns of employment, changes in work organization practices, the different employment patterns of men and women, and the size, structure and life cycles of enterprises and of new technologies can all generate new types and patterns of hazards, exposures and risks (Shannon et al, 1996).

Organization since its creation in 1919, and continues to be so today. Occupational health and safety is a key element in achieving sustained decent working conditions and strong preventive safety cultures (Timpe, 1993). Close to 80 per cent of all ILO standards and instruments are either wholly or partly concerned with issues related to occupational safety and health (Yates, 1992). A large number of areas of ILO activity include an OSH or OSH-related component, among them employment, child labor, the informal economy, gender mainstreaming, labor statistics, labor inspection and maritime safety, HIV/AIDS and the world of work, and international migration. This breadth of penetration gives a clear indication of the continued importance of occupational health and safety as a core element of ILO activity and of the Decent Work Agenda in particular (Fuller, 1999).

In November 2000 the Governing Body of the ILO decided to apply on an experimental basis an integrated approach to ILO standards-related activities in order to increase their coherence, relevance, impact and currency. OHS was selected as the first area to benefit from this approach, and at its 91st Session (2003) the International Labor Conference (ILC) held a general

discussion to this end (ILO, 2003a) (Kenned & Kirwan, 1998). The ILC adopted conclusions defining the main elements of a global strategy to bring about measurable improvements in safety and health in the world of work and recommending the development of a new instrument aimed at establishing a promotional framework for occupational health and safety (Bentley & Haslam, 2001). The human, social and economic costs of occupational accidents, injuries and diseases and major industrial disasters have long been cause for concern at all levels from the individual workplace to the national and international. Measures and strategies designed to prevent, control, reduce or eliminate occupational hazards and risks have been developed and applied continuously over the years to keep pace with technological and economic changes (Hale & Hovden, 1998).

Yet, despite continuous if slow improvements, occupational accidents and diseases are still too frequent and their cost in terms of human suffering and economic burden continues to be significant (Glendon & Litherland, 2001). The means used by the ILO to promote occupational health and safety include international labor standards, codes of practice, the provision of technical advice and the dissemination of information. By these means it aims to increase the capacity of member states to prevent occupational accidents and work-related diseases by improving working conditions (Flin et al., 2000). The responsibility for maintaining a safe and healthy workplace comes with the right to have a safe and healthy workplace as prescribed in the Occupational Health and Safety legislation. Everyone is accountable (as an individual) for carrying out their responsibilities (Bamber, 2003).

V. RESEARCH METHODOLOGY

Research methodology is a systematic way to solve a problem. It is a science of studying how research is to be carried out. Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena are called research methodology (Rajasekar and Philominathan, 2013). According to Martyn Shuttleworth (2008), "Research includes any gathering of data, information and facts for the advancement of knowledge". It is an organized systematic data based critical, objective scientific enquiry on investigation into a specific problem to find a solution.

A. Research Design:

Descriptive research design is adopted for this study.

Descriptive research includes surveys and fact finding enquiries of different kinds; in this type of research the researcher has no control over the variables.

B. Data Collection:

The collection of data in this study is collected through primary and secondary sources.

- i. Primary Data: The primary data are those data's which are collected newly as well as for the first time. In this study primary data is collected through questionnaires or personal interview
- ii. Secondary Data: Secondary data are those which have already been collected by someone and which have been passed through the statistical process. Data is collected from company profile, books, and websites.

C. Sampling Method:

Sampling method is the procedure of selecting units from the sample. Non-probability sampling method was adopted for this study.

- i. Non-Probability Sampling: Non-probability sampling is that sampling procedure which does not afford any basis for estimating the probability that each item in the set of population has of being included in the sample. In this samples are selected for a specific purpose. Hence in this case there occurs a chance of less reliability of conclusions.
- ii. Sampling Type: In this study convenience sampling is undertaken for collecting the samples.

iii. Convenience Sampling: This method of sampling involves selecting the sample elements using some convenient method rather than going through the rigor of sampling method. Convenience sampling attempts to obtain a sample of convenience respondents.

iv. Sample Size: The population size was 100, so the sample size collected for the study is 80 out of 100 employees available at the time when researcher went for training in Nelcast Limited (Machining Division).

D. Research Instrument:

i. Questionnaire: In this method the data collection is quite popular, and hence questions are prepared by the research workers and hence sent it to the respondents. Structured questionnaire was selected as a tool for data collection in this study. It includes multiple choice questions, open questions etc.

ii. Statistical Tools: The statistical tools adopted for analyzing the data collected are Percentage Analysis.

iii. Percentage Analysis: Percentage analysis is the method to represent raw streams of data as a percentage

VI. LIMITATION OF THE STUDY

- The response from the employers has a chance of being biased.
- Fear among the employees in giving response leads to have mild effects on results.
- No chance of free response and communication from the employees.
- The time duration was just one month.
- In few cases the respondents did not answer freely.

VII. DATA ANALYSIS AND INTERPRETATION

TABLE: I DISTRIBUTION ON VARIOUS FACTORS AND INDUSTRIAL AND MACHINE SAFETY

Factors and Number of Respondents				
Distribution based on age	20-30	31-40	41-50	51& above
	35	29	11	5
Distribution based on experience	Below 5	6-10	11-20	21 & above
	7	27	33	13
Effects of industrial safety and work environment on productivity	To a great extend	To some extend	To a little extend	No idea
	48	16	12	4
Employees opinion on conditions of machines	Excellent	Good	Fair	Poor
	56	11	10	3

TABLE:II PERCENTAGE ANALYSES FOR TABLE I

Percentage Analyses				
Distribution based on age	20-30	31-40	41-50	51& above
	43.75	36.25	13.75	6.25
Distribution based on experience	Below 5	6-10	11-20	21 & above
	8.75	33.75	41.25	16.25
Effects of industrial safety and work environment on productivity	To a great extend	To some extend	To a little extend	No idea
	60	20	15	5
Employees opinion on conditions of machines	Excellent	Good	Fair	Poor
	70	13.75	12.50	3.75

Inference: Among the employee's 43.75% belong to the age group of 20-30. The next highest frequency distribution is in the age group of 30-40. 41.25% of the employees are having experience of more than 10 years as compare to others. 60% of the respondents feel that productivity increases to great extend due to practicing of industrial safety & good work environment. 70% of the respondents feel that machines in the shop are in excellent condition.

TABLE: III RATES OF ACCIDENTS AND TRAINING PROGRAM

Number of Respondents		
Factors	Yes	No
Rate of accident for the past one year	11	69
Training program for safety	66	14

TABLE: IV PERCENTAGE ANALYSES FOR TABLE III

Percentage Analyses		
Factors	Yes	No
Rate of accident for the past one year	13.75	86.25
Training program for safety	82.50	17.50

Inference: 86.25% of the employees have not met with the accident while 13.75% of the employees have met with the accident during the working hours. Hence the organization has to find out the root cause for the accidents and take measures to reduce the accidents. 82.50% of respondents have attended the training program for safety conducted by the organization.

TABLE: V EMPLOYEE SATISFACTIONS AND OPINION ON VARIOUS FACTORS

Number of Respondents					
Factors	Highly Satisfied	Satisfied	Neutral	Dissatisfied	Highly Dissatisfied
Employees satisfaction level on safety provisions	49	20	10	1	0
Employees satisfaction level on safety measures	57	16	5	2	0
Employees opinion on first-aid	10	59	9	0	2
Employees opinion on safety equipments	57	20	3	0	0
Employees opinion on the efforts taken by the organization to ensure employee safety	41	23	10	3	0
Employees opinion on work environment	43	19	11	7	1
Employees opinion on maintenance of machine guards	48	20	9	3	0
Employees opinion on housekeeping activities	53	10	11	6	0

TABLE: VI PERCENTAGE ANALYSES FOR TABLE V

Percentage Analyses					
Factors	Highly Satisfied	Satisfied	Neutral	Dissatisfied	Highly Dissatisfied
Employees satisfaction level on safety provisions	61.25	25	12.50	1.25	0
Employees satisfaction level on safety measures	71.25	20	6.25	2.50	0
Employees opinion on first-aid	12.50	73.75	11.25	0	2.50
Employees opinion on safety equipments	71.25	25	3.75	0	0
Employees opinion on the efforts taken by the organization to ensure employee safety	51.25	28.75	12.50	3.75	0
Employees opinion on work environment	52.75	23.75	13.75	8.75	1
Employees opinion on maintenance of machine guards	60	25	11.25	3.75	0
Employees opinion on housekeeping activities	66.25	12.50	13.75	7.50	0

Inference: 61.25 % of the employees are satisfied with implementation of safety provisions in the organizations. From this we can infer that organization has taken special care in making the employees understand about the safety provisions. 71.25% of

the respondents are satisfied with the safety measures provided to them. Hence we can infer from the above chart that the organization is implementing the right safety measures which make the employees satisfied. 73.75% of the employees are satisfied with the first aid provided by the organization at the time of accidents. 71.25% of employees are highly satisfied with safety equipments provided by the organization. 53.75 % of the respondents are highly satisfied with the work environment. 60% of the respondents are satisfied with maintenance machine guards. 66.25% of respondents are highly satisfied with the housekeeping activities.

TABLE: VII CAUSE OF ACCIDENT AND TRAINING PROGRAM

Major cause for accident in the work place	Factors and Number of Respondents					
	Unsafe work condition	Health problem	Family problem	Over workload	Communication gap	Rules not followed
	11	6	12	10	16	25
Types of training program	Electrical safety	Chemical safety	Health safety	General safety	Machine safety	Fire safety
	10	16	20	15	11	18

TABLE: VIII PERCENTAGE ANALYSES FOR TABLE VII

Major cause for accident in the work place	Percentage Analyses					
	Unsafe work condition	Health problem	Family problem	Over workload	Communication gap	Rules not followed
	14	7	15	13	20	31
Types of training program	Electrical safety	Chemical safety	Health safety	General safety	Machine safety	Fire safety
	12.50	20	25	18.75	13.75	22.50

Inference: 31% of the employees feel that not following the prescribed rules is the major cause for accident. While 20% employees say that communication gap is the reason for accident. 25% of employees are in necessity of health safety training and 22.50 % of the employees are in necessity of fire safety training.

VIII. FINDING

Among the employee's 43.75% belong to the age group of 20-30. The next highest frequency distribution is in the age group of 30-40. 41.25% of the employees are having experience of more than 10 years as compare to others. 42.50 % of the employee's fall under the income group of 20001 & above. 71.25% of employees are married whereas 28.75% of employees are single. 61.25% of the employees are satisfied with implementation of safety provisions in the organizations. From this we can infer that organization has taken special care in making the employees understand about the safety provisions. 71.25% of the respondents are satisfied with the safety measures provided to them. Hence we can infer from the above chart that the organization is implementing the right safety measures which make the employees satisfied. 60% of the respondents feel that productivity increases to great extend due to practicing of industrial safety & good work environment. 86.25% of the employees have not met with the accident while 13.75% of the employees have met with the accident during the working hours. Hence the organization has to find out the root cause for the accidents and take measures to reduce the accidents. 54.54% of the accident occurs during night shift. Hence the organization should find out the problems faced by the employees during night shift and take necessary steps to avoid accidents 73.75% of the employees are satisfied with the first-aid provided by the organization at the time of accidents. 31% of the employees feel that not following the prescribed rules as per the major cause for accident. 71.25% of employees are highly satisfied with safety equipments provided by the organization. 51.25% of employees are highly satisfied with the efforts taken by the organizations to ensure employees safety. 82.50% of employees have attended the training program for safety conducted by the organization. 25% of employees have attended health safety training, 22.50% of employees have attended fire safety training and 20% of employees have attended chemical safety training. 53.75 % of the employees are highly satisfied with the work environment. 70% of the employees feel that machines in the shop are in excellent condition.

60% of the respondents are satisfied with maintenance machine guards. 66.25% of respondents are highly satisfied with the housekeeping activities.

IX. SUGGESTION AND RECOMMENDATIONS

- The safety, health and environmental policy can be displayed widely at conspicuous locations (mounted on walls of the factory). The safety policies can be made known to all employees, contractors and contract employees by circulating the policies in both English and regional language.
- To motivate the employees every year competitions can be conducted on national safety day. Safety events can be conducted frequently to make awareness among the employees on safety.
- Steps have to be taken to identify the employees those who have not undergone any formal safety programs through verification of records and train them. This will ensure some safety awareness among them. Training can be given through unit wise, team wise like kaizen or work team.
- Attention should be focused on minor accidents so that major accidents can be prevented, for which analysis of accidents is necessary. To reduce the accidents, supervisory staff and management should be more pro-active in the shop floor, so that all the employees use the safety equipment's provided to them.
- Safety issues like accidents, problems, achievements etc, which are discussed in the safety committee have to be communicated to the employees by the middle level management.
- Employer should ensure that the employee who works about 2m heights is wearing the safety belt.

X. CONCLUSION

Industrial progress of the country depends on its committed labor force. Efficiency in work is possible only when the employees are safe in their working environment and also provided with some safety measures.

The study has revealed the perception of employees with regard to safety measures and work environment. The result of this study shows that majority of the employees perceive the present efforts taken on safety measures and work environment is satisfactory yet there are some factors which need to be concentrated by the company which is suggested by the researcher to ensure hundred percentage safety and congenial work environment which in turn improve the efficiency and confidence of the employees.

Hence, in designing safety programs and good working environment the management should not compromise even with the smallest safety concept which may be costly to both management and the employees.

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