

Study of Occupational Health, Safety and Environmental Aspects in Major Cement Manufacturing Industry (Ultratech Cement Limited.)

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Abstract

Scientific progress has made life more comfortable; but there exists the potential for permanent anatomical or physiological damage due to hazards especially among industrial workers. Traumatic occupational injuries lead to 10,000 deaths among workers annually. The International Labor Organization (ILO) has observed that an estimated 50 million work related injuries occur every year or 160000 every day^[1]. India's potential in infrastructure is vast and cement plays a vital role in the growth and development of the nation. India is the second largest producer of cement in the world. The cement industry has been expanding on the back of increasing infrastructure activities and demand from housing sector over the past many years. Cement consumption in India is expected to rise by 8–9 per cent over the next year, taking the estimated cement consumption in 2013–14 to about 280–285 MT, from around 260 MT in the 2012–13 fiscal, as per the Cement Manufacturers Association (CMA)^[2].

Safety is a priority of any industrial activity. It is a positive cultural element that allows other improvements in the factory. An administration that does not attain to manage safety is not in a position to manage other functions. However, as work accidents and occupational diseases have an enormous impact on the health of workers and considerable economic and social impacts^[3]. In addition, with the increasing complexity of industrial tissue and with the rapidity that the techniques develop in the big factories, risks assessment becomes a crucial and strategic answer to preserve workers health and safety on the one hand and to maintaining a qualified labor on the other hand. The Health and safety performance of the cement industry as a whole is lagging behind that of other, more proactive, sectors of manufacturing industry. Within the sector, there is a wide range of performances. The better companies have demonstrated that it is possible to achieve injury rates similar to the average for the manufacturing industry. However even the best have room for further improvement. There is a particular need for the industry to encourage and help those companies and plants that are significantly under-achieving to raise their safety standards to ensure a sustainable industry that meets social and employment expectations^[4]. In addition, with the permanent evolution of work, even its risks, it becomes increasingly insufficient to establish general safety rules of, relying solely upon standards and regulations to comply, but move to awareness, information, training and motivation of staff on the role of health and safety at work, steps previously required for the implementation of a prevention, even to a mitigation measures relevant and effective. That allows to define a general policy of prevention and to bring to successful management of industrial risk within the entity. Hence, it has become essential to give all staff a real sense of safety that will predict and act in very affective way; objective of this work. This study will present a technique of analysis to better understand the dynamic of the policy in terms of health and safety at work established in the cement plants.

Keywords: Safety, Risks, injury, Standards, Policy, Manufacturing.

Introduction

Cement is an essential component of infrastructure development and most important input of construction industry, particularly in the government's infrastructure and housing programs, which are necessary for the country's socioeconomic growth and development. It is also the second most consumed material on the planet (WBCSD 2002). The Indian cement industry is the second largest producer of cement in the world just behind China, but ahead of the United States and Japan. It is consented to be a core sector accounting for approximately 1.3% of GDP and employing over 0.14 million people^[5].

Health and safety is the number one priority for the cement industry for its employees, contractors, end-users and those who are neighbors to its operations. It is a positive cultural element that allows other improvements in the factory. An administration that does not attain to manage safety is not in a position to manage other functions. However, as work accidents and occupational diseases have an enormous impact on the health of workers and considerable economic and social impacts. In addition, with the increasing complexity of industrial tissue and with the rapidity that the techniques develop in the big factories, risks assessment becomes a crucial and strategic answer to preserve workers health and safety on the one hand and to maintaining a qualified labor on the other hand. These are data, among others, that have triggered the alarm signal and impose the necessity of an increased safety in the factories. Therefore, a priori assessment of these risks and the implementation of a prevention approach within a factory are required to become one of the main drivers of progress. Hence, for some employers, employees and their representatives, health and safety at work do not mean so much. In addition,

with the permanent evolution of work, even its risks, it becomes increasingly insufficient to establish general safety rules of, relying solely upon standards and regulations to comply, but move to awareness, information, training and motivation of staff on the role of health and safety at work, steps previously required for the implementation of a prevention, even to a mitigation measures relevant and effective.

In all the cement production processes there are hazards that can be classed in:

- a) Routine and general hazards such as:
 - Safe behavior
 - Environment, work and passage areas
 - Work equipment
 - Safety labeling
 - Personal Protective Equipment (PPE)
 - Manual load handling

- b) Special hazards during the cement production phases such as:
 - Quarrying
 - Crushing
 - Clinker production
 - Milling processes at raw mill, cement milling and coal milling
 - Material transport
 - Filtering
 - Storage
 - Loading and delivery of final products
 - Fuel storage activities
 - Use of hazardous material
 - Generating units

- c) Special hazards as a result of the work environment:
 - Dust
 - Noise
 - Fire
 - Emergency response

The pollutants in the cement industry are emitted from the various production processes from the material such as the raw material, crusher, rotary kiln, cranes, mills, storage silos and packing section, etc., Airborne respirable dust levels from less than 5 to more than 40 mg/m³ have been recorded in the work place air of cement factory workers. The aerodynamic diameter of the cement dust ranges from 0.05 to 20 µm, making the whole respiratory tract a target for cement deposition ^[6].

Objectives of the study

- To identify the Health, Safety and Environment related problems in the industry under study.
- Gap identification and analysis between ideal situation and current status of Health, Safety and Environment in the industry.
- Addressing the gaps identified.
- Provide possible corrective actions for all the identified hazards.
- Recommendation of corrective action of the problems.

Methodology Adopted

Firstly the Indian policies and legal framework relevant to the safety policy and management will be reviewed, to understand the legal requirements and the difficulties in enforcement.

- Baseline data collected from the cement manufacturing industry. Data is being collected for different activities and processes of cement manufacturing. Questionnaires and checklists were being used for the study.
- Occupational, health and safety aspects were being monitored in the industry.
- Compliance of various statutory regulations and standards followed by the industry was being checked thoroughly.
- Various problems related to health, safety and environment in the industry was being addressed.
- Mitigation strategies and corrective actions based on findings and best practices adopted by the industry were being provided.

- Conclusion, recommendations and the scope for future studies were being given.

Result and Observation

- 1) Industry is well equipped with all the necessary PPE's required by the workers.
- 2) Strict compliance of rules, regulations and all safety standards is being done.
- 3) It is having a fully fledged safety policy, safety manual.
- 4) It provides proper training to the workers and employees.
- 5) It is having advanced technology designed equipments and machineries to manufacture premium quality of cement.
- 6) It has sufficient equipments to control and prevent environmental degradation.

Conclusion

Control measures at source, path and persons exposed to the hazards, together with education in occupational health and safety are the ideal means of preventing occupational diseases and injuries from the manufacture of cement. Workers' knowledge about the hazards associated with their jobs and workers education especially instructions on control and use of personal protective measures is helpful to reduce and may even eliminate some occupational health risks.

Thus it can be seen that the health and safety problems in cement manufacturing industry can be reduced by maintaining safe working conditions, preparation and implementation of safe operating procedures, study of environmental conditions, and enforcement of safety procedure, training of employee and periodic medical supervision and use of personal protective equipment. All these activities are possible only with the support of top management and co-operation of workers as well as active participation of supervisory staff.

Recommendations

- Use earmuff or ear plug where the noise level is more than or equal to 90dB (A).
- Use earmuff or ear plug if any employee feel uncomfortable even though the noise level is in prescribed limit of CPCB.
- Short circuit/ loose electric connection should be strictly avoided.
- All construction material i.e. beam, pipes, power equipment etc which cannot be remove to a safe location, they are to be lashed in place in the best possible manner known.
- Use of fabric filter system (baghouses) instead of electrostatic precipitator will be more reliable and efficient.
- Covered conveyor belts for transportation of raw materials, covered shed for additives.
- Benchmarking the best practices and measures with the leading competitors to ensure best safety policy in the industry.

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