Status of Occupational Health and Safety Management System in the Cement Industries of Hattar Industrial Estate, Pakistan

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Abstract

The main purpose of the research was to investigate the current situations of occupational health and safety OHS management practices and their impacts on the health and economy of the workers in the Cement industries of HIE Hattar Industrial Estate. It is duty of employees and employers to maintain the safe conditions for work at the work site but due to poor legislation, implementation, awareness, polices and techniques in the field of OHS both are not performing their best duties which are causing huge damage to the health of workers and economy of the industry. Both employees and employers are bounded to maintain OHS morally, legally and financially. This study showed that there are many lapses in the OHS management systems adopted by cement industries of HIE including lack of OHS expertise, trainings of workers, Management willingness and devotion towards the OHS. Due to improper implementation of OHS practices a lot of workers were suffering from occupational diseases and disorders. Accidents rate were also high in cement industries causing huge damage to workers as well as to the industry in the form of direct and indirect cost.

Keywords: Occupational Health, workers, Risks, cement industry

Introduction

During the mid of industrial era due to negligence to the welfare , safety of workers the number of accidents , deaths , work related illness were increasing day by day causing shortage of healthy workers, which had direct effect on the productivity. So the investors sat to think the solution for

the problem and such meeting raised the idea of occupational health and safety (Smallman& *John*., 2001). It is the ethical and legal responsibility of employer and employees to maintain the workplace safe for the workers (Ahsan*et al*., 1998). Safety and health is considered as a socio-economic issue but in most of developing countries these practices are not considered and management showed careless behavior (Smallman& *John*, 2001). Due to lack of proper health and safety practices including Risk Assessment, Job Safety Analysis, Work permit, Safety Plans, regulations about OHS and awareness about the health and safety issues the rate of casualties is much more in the developing countries (Barratt-Pugh&Bahn, 2009). Poor Occupational Health and Safety lead to a huge economic loss in the form of direct and indirect. Direct cost is tangible cost which can be measure including compensation, treatment etc but actually it is like an Iceberg in the ocean (Marucci-Wellman *et al.,* 2015).Worldwide every year more than 2 million people die from occupational accidents and work related diseases. More than 160 million people suffer from occupational diseases. Accidents and fatalities bring the economic problems. Both direct and indirect cost including penalties, compensations, fines , material loss, overtimes , installment of new machines, new hiring of new staff etc.(Nastiti*et al*., 2012). Good health and safety management practices can lead to reduce the burden of work related accidents and work related diseases. But management should have a clear and transparent policy, expert staff, motivated workers, aware stakeholders and positive behavior towards health and safety. Occupational health and safety management system is not as expensive as it is consider in most of countries. It has comparatively low cost if it is analyzed by the loss caused by accidents at work sites (Verbeek&Ivanov, 2013).

Qualified and experienced Safety representative play a very effective role in the adaptation of good OHS MS and its affectivity. It is a renowned certainty that human resource is the key feature of organizational success. Establishments' power originates from the physical and mental strength of their workforces (Sarı, 2009). It is a fact the enterprisers where owners are have interest in the OHS rate of accident is significantly lower than those where owner don't give importance to the OHS (Chunxiang, 2012). It is also observed that OHS certified company's Head are more aware than those have no certification (Yoon *et al.,* 2013; Mendes *et al.,* 2014). Lack of Education and Occupational training leads probabilities of 12% occupational injury. Working experience is the second most dominant risk factor. The chance of occupational injury is 11% lower for respondents with longer working years. Gender has significant effect on incidence of occupational injury. Paralleled to females, the possibility of occupational injury is 10% higher for male migrant workers. Age also has a substantial consequence. Linked to the workers under the age of 30, those over the age of 45 are 18% less probable to hurt occupational injury (Zhang, 2012; Feszterová, 2014). The current situations of occupational health and safety management practices in Pakistan are not considerable. There is no comprehensive Law about Occupational health safety which is leading to high accident rate, work related fatalities and disease causing socio economic problem for the victims and their families (Tariq, 2003). Cement industry of Pakistan have high rate of accident rate and occupational disease because of the lack of proper and comprehensive Laws, clear policies, positive behavior towards Safety and health issues. Due to which the workers in the mentioned industry have extra expense on the medicines and doctors while industries pay extra expense on direct and indirect cost (Awan, 2001).

Methodology

Three active cement industries of Hattar Industrial Estate were selected for the research on the basis of their workforce strength, production rate, OHS status and implementation of an OHS management system. These were

Bestway Cement Industry, Hattar (Plant A)

Bestway Cement Industry, Farooqia (Plant B)

DEWAN Cement Industry, Hattar (Plant C)

Different questionnaires in Urdu and English languages were distributed in the 50% of the workers, officers, safety representatives, head of safety department, managers and top managers working in cement industry to get the answer of the research questions. Out of total 1593 workers of three plants 797 workers were approached. Questionnaire included questions related to hazards at works site, risk of accidents, health status, financial status, expenses on the work related disease, OHS management practices, trainings, polices and their implementations, Previous accidents their root causes and health and socio economic loss by accident.

During the questionnaire preparation it was kept in mind the many workers and managers don't like to give correct information about accidents and mishaps in the industry so the same questions are repeated in different wording to check the information liability. Data about accidents cause of accident cost of accidents, accidents investigations were acquired from accident record books, audit reports, financial reports, safety audits, workers welfare departments and medical reports.

Result and Discussions

Cement industry of HIE

Plant A, Bestway cement Industry Hattar is located at UC Hattar two km far from the Hattar Road with the workforce of 570. Plant B, Bestway Cement Industry Farooqia is located on the Road of Farooqia. 509 workers were working at the time of study. Plant C is Dewan Cement Industry located in UC Hattar on the Road having 514 workers. Total 1593 workers are associated with cement industry.

Socio Economic Conditions

Worker's age

Figure 1 describes age of workers at all three plants. Age of Workers have direct influence on the Occupational Health and safety of the workplace. Too young or too aged workers are more threatened and at high level of any type risk at the workstation (Frazier *et al.,* 2013). With relation to the age of workforce the cement industries of HIE are better than other industries as they do not have too young laborer and aged as well.

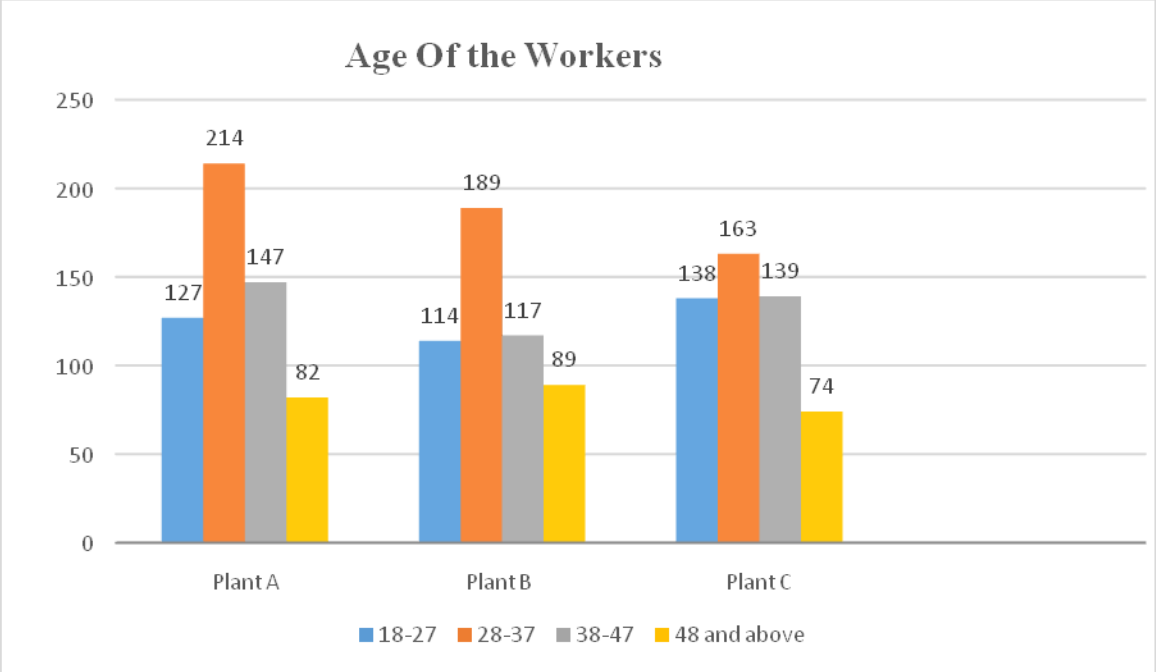
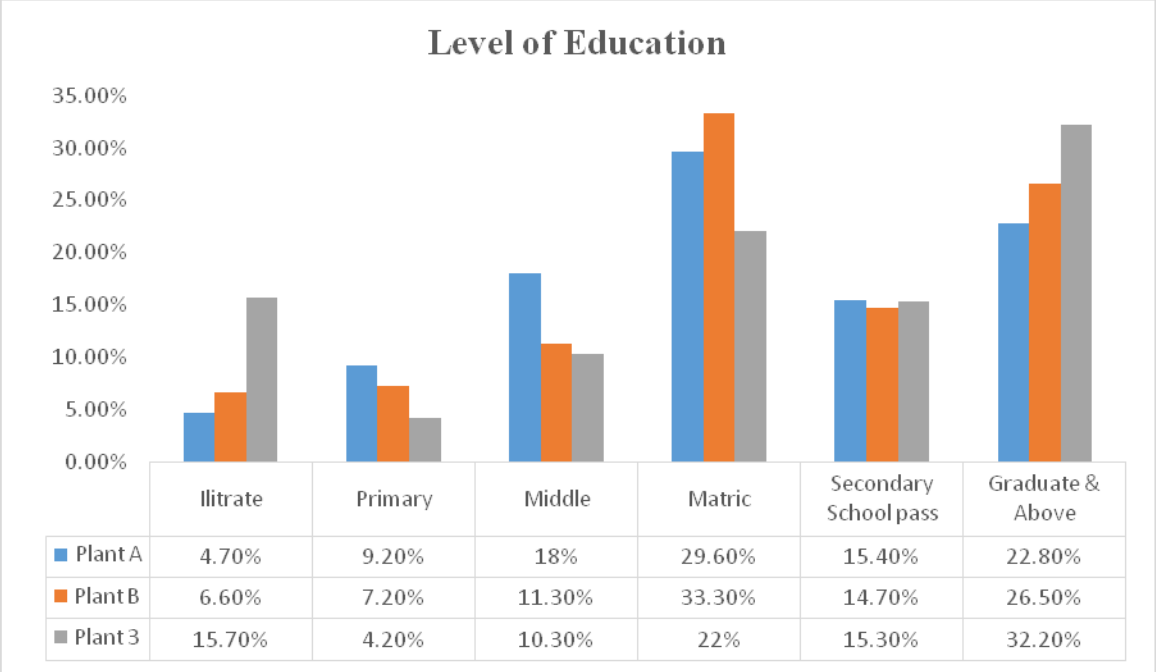


Figure.1 Workers age in the cement industries of HIE

Educational status

Workers with poor educational status are always at high risk of danger. Research showed that a lot of accident injuries and fatalities were concerned with least educational background (Flin*et al.*, 2000). The educational status of all three plants is satisfactory. Most of the workers in the cement industry are literate and there are good numbers of graduates in all three plants (Fig 2).



	Illitrate	Primary	Middle	Matric	Secondary School pass	Graduate & Above
Plant A	4.70%	9.20%	18%	29.60%	15.40%	22.80%
Plant B	6.60%	7.20%	11.30%	33.30%	14.70%	26.50%
Plant 3	15.70%	4.20%	10.30%	22%	15.30%	32.20%

Figure 2. Educational status of workers in cement industries of HIE

Wages of workers

Suitable and good salaries play important role on OHS practices by the workers mental satisfaction and full attention towards the work while with poor wages workers does not take interest in the work, have mental stress and become violent about the safety rule creating risk for his and other workers life as well (Dorman, 2000). Though according to rules of KPK Government most of the workers get pay more than 10,000 but workers are not satisfied on this pay. Very few numbers of workers get more than 25,000 and with relation to their qualification and experience this is not enough for them (Fig 3).By increasing salaries and enhancing mental health 15% accidents can be reduced (Takala, 1999).

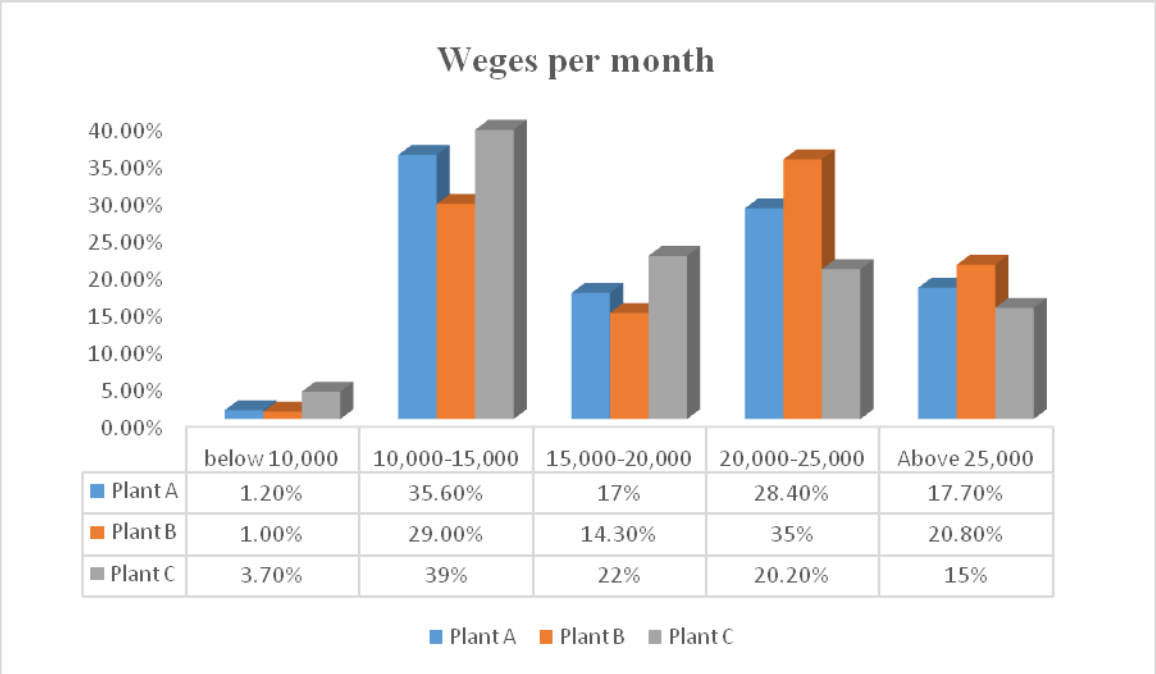


Figure 3.Wages of workers in the cement industries of HIE

Worker's experience

The industries where there are more experienced workers are present the rate of accident is comparatively low (Smith *et al.*, 2005). Workforce of all plants is experienced very low numbers of workers are fresh having no previous experience. Most of the workers have 5 to 10 year experience. Plant A has highest number of workers having experience more than 10 years(Fig 4).

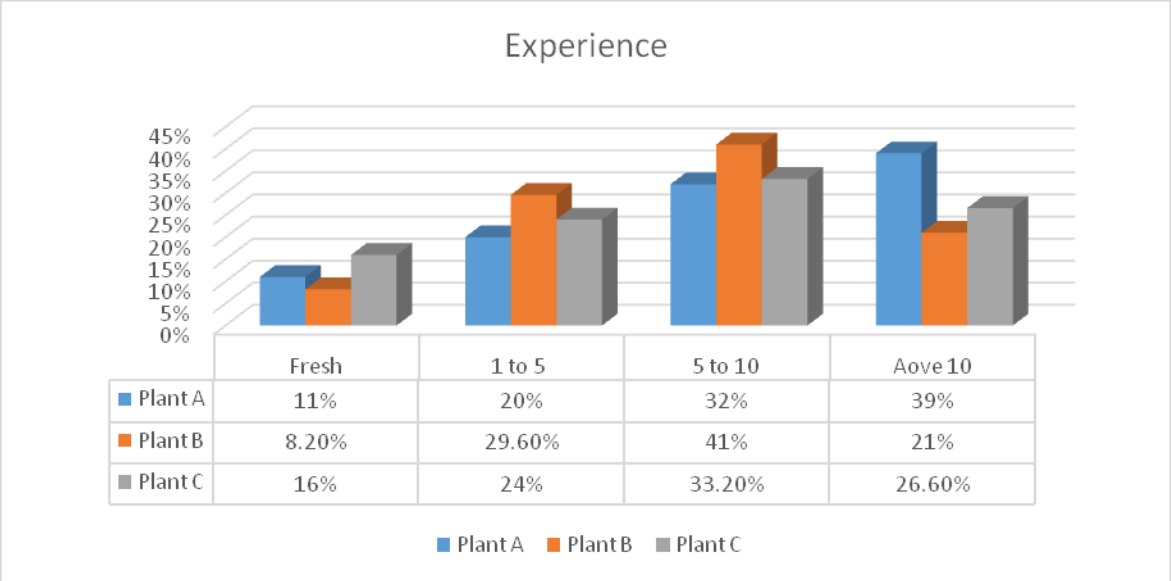


Figure 4.Experience of workers in the cement industries of HIE

Welfare and safety facilities

It is the duty of employer to provide the basic welfare facilities to his employees. These facilities include Medical facilities, Good housekeeping at workstation, better ergonomic conditions for work, clean drinking water, eating and resting facilities, holidays wages, Insurance, washing and bathing facilities and sanitary conveniences etc. welfare status at the Cement industry of Hattar industrial estate is better than other industries in of the HIE. To quantify the welfare and safety facilities 15 point system was used in which points were given according to quality, efficiency, availability to workers, worker's opinions (Table 1&2).

Table.1 show Point system

Points	Quality of W&S F
0-5	Poor
6-10	Good
11-15	Very Good

Though there are some gaps in the provision of welfare and safety facilities to the workers in cement industries but they are still better than other industries of HIE.

Table.2 shows Status of WSFs of Cement Industries of HIE

Facility	Status at Plant A	Status at Plant B	Status at Plant C
Medical facilities	Good	Very Good	Good
Good housekeeping	Poor	Good	Poor
Good ergonomic conditions	Poor	Poor	Poor
Clean drinking water	Good	Good	Good
Mosque	Good	Good	Good
Canteen	Good	Good	Poor
First aid	Good	Good	Good
Emergency transport (ambulance)	Good	Good	Good
Insurance	Good	Good	Poor
Sick leaves	Good	Good	Good
Holiday wages	Poor	Poor	Poor
Provision of PPEs	Good	Good	Poor
Warning signs	Good	Good	Poor
Sanitary conveniences	Good	Good	Good
Washing & bathing	Poor	Poor	Poor

facilities			
Changing & resting rooms	Poor	Good	Poor

Health Status of Workers

Through the OHS MS, its implementation and performance in the Cement industry of HIE it is a very clear thing that the workers' health is not given such importance. That's why the workers of the All three plants are not too much healthy and have different sort of health problems due to which the families of workers have to bear extra expanse in the form of medicine and lack mental satisfaction. On other hand industry has to face medical leaves, medical bills, overtimes etc. through the interviews and questionnaire we assess the worker health status of three plants under the study. Above table is a brief summary of workers health in the Cement Industry of Hattar Industrial Estate. During the assessment of workers health, the period of job in the cement industry was kept in mind. Most of the workers are exposed to dust and have respiratory problems. Many workers have Work related musculoskeletal disorders due to exposure to bad ergonomic condition of work environment and work. Exposures to noise and due to lack of proper PPEs usage a lot of workers have hearing problems. Cement Dust cause eye irritation and prolong exposure without safety measures lead to visual disorders which is observed in the in the Cement industry of Hattar (Table 3). Prolong contact with the Cement cause skin problems in the workers.

Table 3.Shows Health status of workers

Diseases	Plant A	Plant B	Plant C
Respiratory Problems	32%	17%	35%
Work Related Musculoskeletal Disorders	27%	22%	31%
Hearing Impairment	11%	9%	14%
Visual Impairment	2%	2%	3%
Skin Problems	5%	3%	7%
Mental stress	19%	23%	28%
Minor Injuries	21%	09%	23%
Other	13%	5%	17%

Healthy workers	25%	32%	22%

Cement dust is inhalable and cause blood problems if enter in the body through any mean. Mental stress is also very common in the workers of all three Plants due to different reasons. Along the illness some workers face physical injuries during the work only minor injuries are discussed in this section. Few numbers of workers claimed to be fit and healthy.

Respiratory Problems

Many workers of the cement industry claim respiratory problems due to exposure to the dust produced by crushing, storage, material movement, grinding and milling, Silo clean, clinker production, loading and delivery of the cement. Cement dust can cause harmful effects on the repertory system. As it contains Calcium oxide (62% - 66%), Silicon oxide (19% - 22%), Aluminum tri-oxide (4%-8%), Ferric oxide (2% - 5%), Magnesium oxide (1% - 2%) 4 and also Selenium5, Thallium6 and other impurities (Lea, 1971) Workers claimed some respiratory diseases caused by their occupation including
Cough, phlegm production, chest tightness, impairment of lung function, obstructive and restrictive lung disease, pleural thickening, fibrosis, emphysema, lung nodulation, pneumoconiosis and carcinoma of lung. At plant A 32% of workers claimed to be ill and have respiratory problems, 17% at Plant B while 35% at Plant C are facing theses illnesses. The difference between the percentages among the ill persons at the three plants is due to their safety measure. Through risk assessment it is clear that control measures of Plant B are better than Plant A and C that is fact the Plant B have reduction in 50% respiratory problems as compere to other two plants (Fig 5).

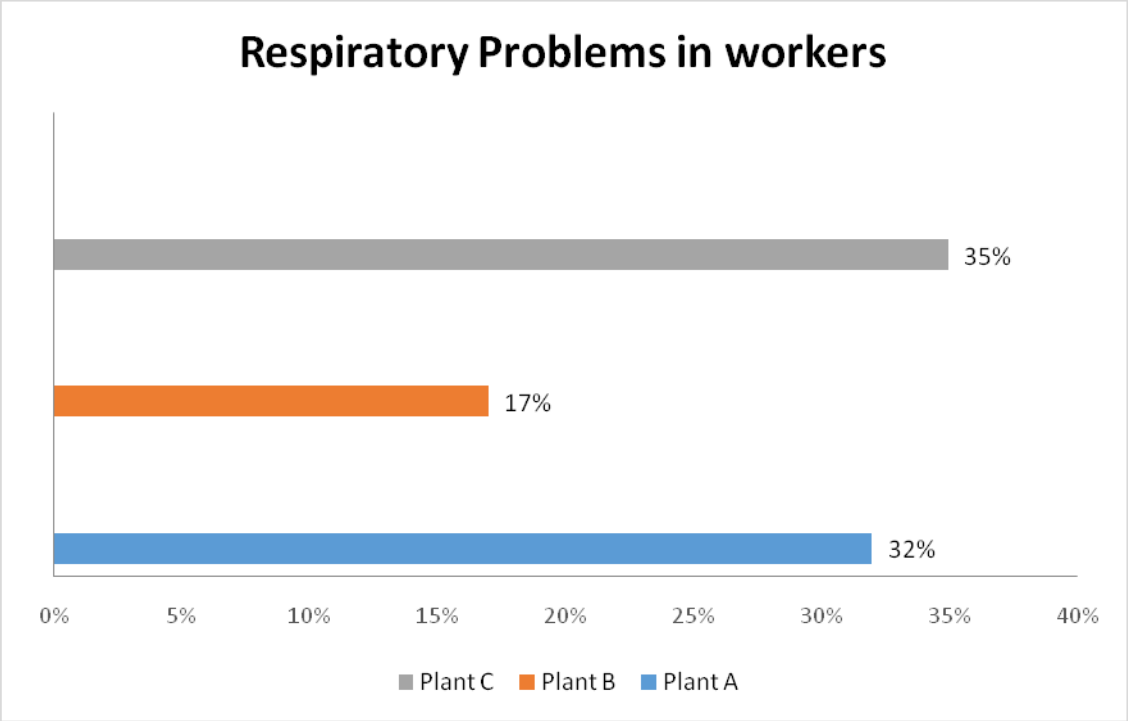


Figure 5. Respiratory problems in the workers of cement industries of HIE

Workrelated Musculoskeletal Disorders

Work Related Musculoskeletal Disorders WRMD are also very common in the workers of Cement industry of HIE due to poor Ergonomic situations and manual handling at different sections. Poor ergonomic conditions of work include the working in poor posture, continual work without resting hours along this manual handling without any supervision cause back injuries, back pain, work related upper limb disorders, some chronic soft-tissue injuries like painful knee joints and fatigue. Risk assessment showed that at all three plants the safety measures to reduce WRMD are not satisfactory in the result 27% at Plant A, 22% at Plant B and 31% at Plant C claimed different WRMDs (Fig 6).

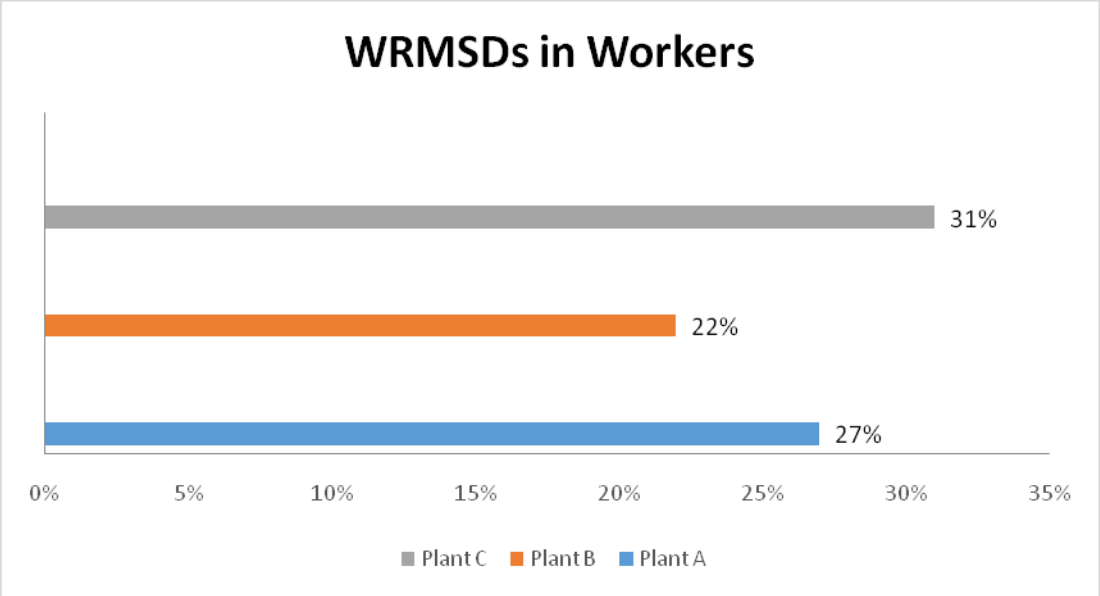


Figure 6. WRMSDs in the workers of cement industries of HIE

Hearing Impairment

Noise is a very common hazard almost all manufacturing industry but in cement industry the workers are exposed to high level of continual noise at some section too much high as 90-100 dB(Decibel). Due to continual exposure without proper safety measures many workers of cement industry claims to have hearing problems caused by noise including temporary reduction in hearing sensation, temporary ringing in the ears, Noise induce hearing loss and tinnitus. At Plant A, 11%, Plant B, 9% and 14% at Plant C are affected by noise and have above mentioned problems (Fig 7). The reason behind this is improper usage of Ear defenders like ear plugs and ears muffs. Poor maintenance level of machines and lack of other engineering and monumental safety measures to reduce the noise at the plants.

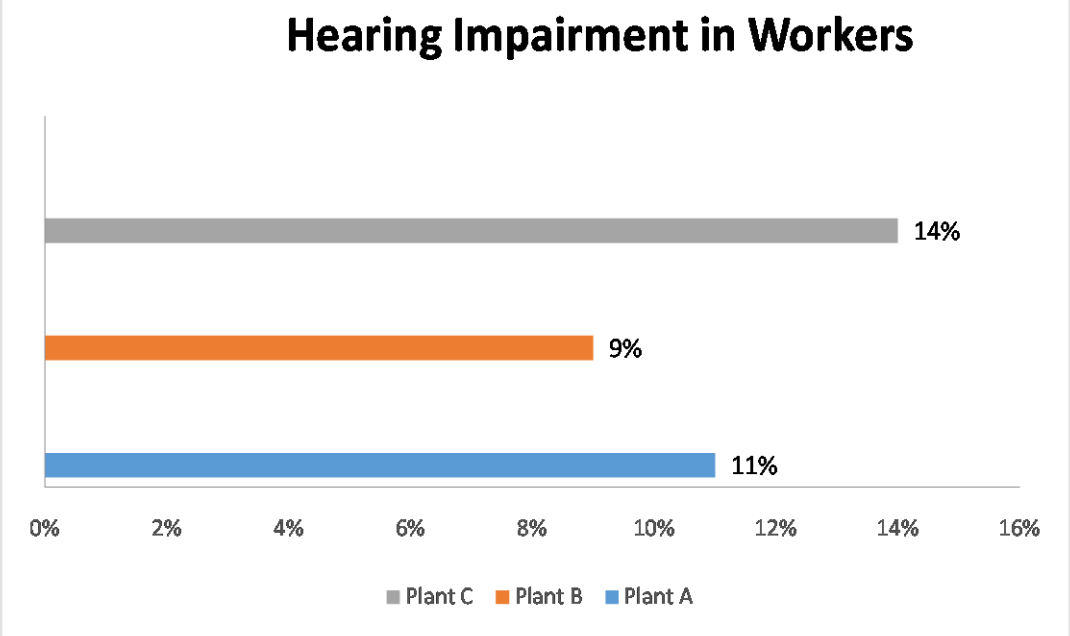


Figure 7.Hearing impairment in the workers of cement industries of HIE

Visual Impairment

Irritation of eyes, runny eyes and conjunctivitis are some disease found in the workers of cement industry due to exposure to the dust, flames during welding and maintenance work. At all three plants the safety measures to reduce the workers exposure to the dust and flame woks is not satisfactory that why many workers claim to have eye problems. 2% workers claimed to have eye problem at Plant A and B while 3 % workers have eye problems at Plant C (Fig 8).

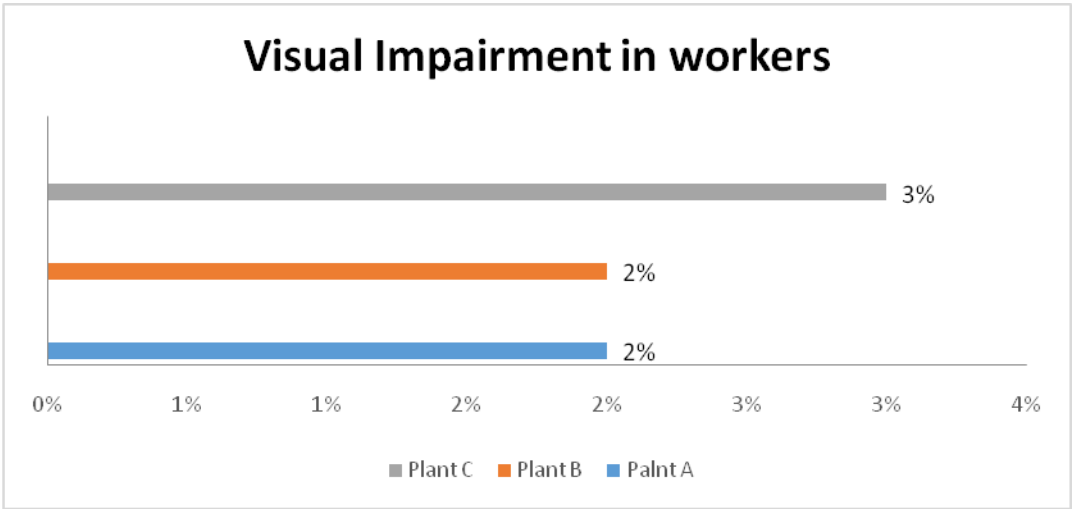


Figure 8. Visual impairment in the workers of cement industries of HIE

Skin Problems

5% at Plant A, 3% at Plant B and 7% workers at Plant C were affected by the skin problems due to their job. Cement dust can cause skin irritation, itching, skin boil and burn. Workers claim irritation dermatitis, allergic dermatitis and corrosive burns. Due to lack of proper safety ware and uniforms and lack of bathing facilities the number of skin problem is high in the cement industry of HIE (Fig 9).

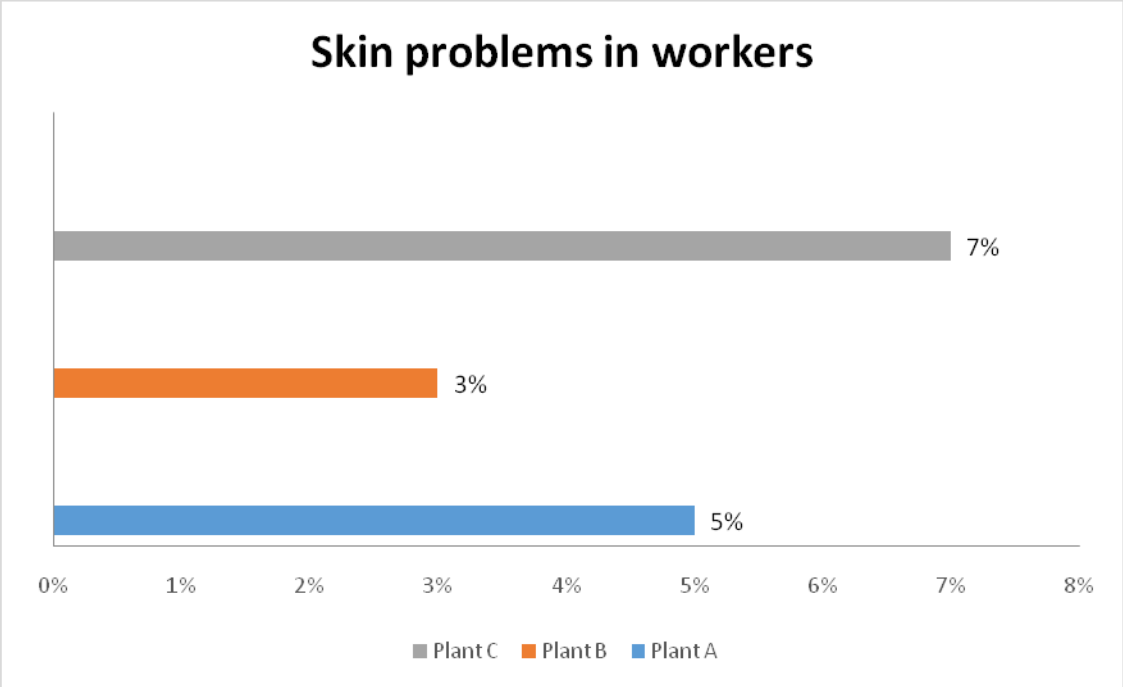


Figure 9.Skin problems in the workers of cement industries of HIE

Mental Stress

Work stress can cause a lot of problems at the workstation as well as in the society. At cement industry of HIE causes of stress may be burden of over production, noise, a lot of hazards, peer group pressure, less pays, work hours, lack of facilities, job insecurity. A significant number of workers claim stress symptoms at the cement plants due to their work. 19%, 23% and 28% workers were in stress condition at plant A, B and C respectively. Anxiety, low self-esteem, depression, more sweating, high blood pressure, skin rashes, headache, dizziness, sleeplessness and mood swing was observed in the workers (Fig 10).

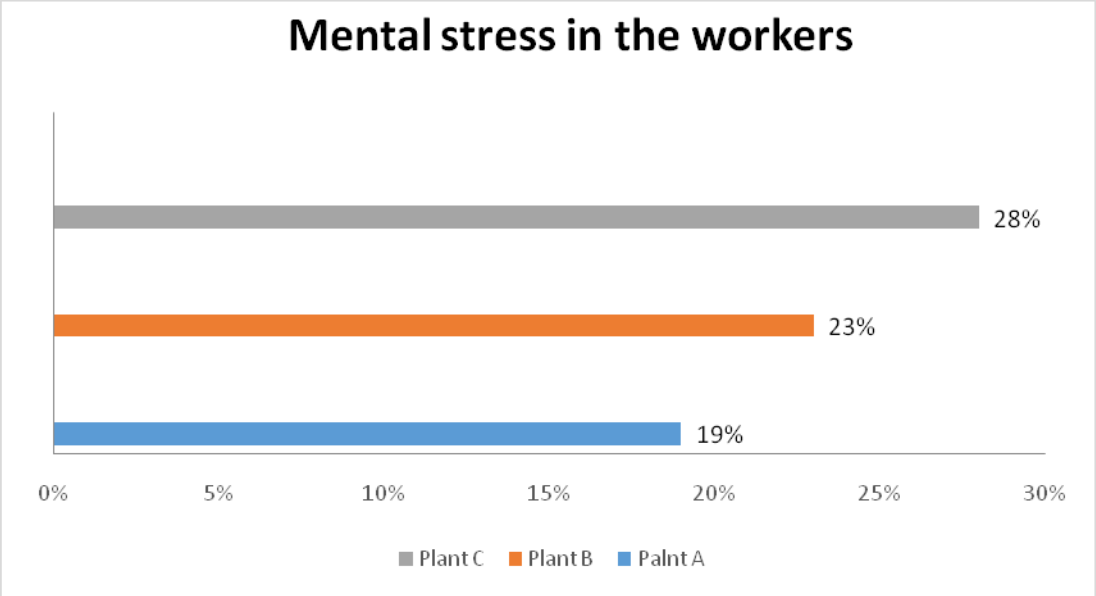


Figure 10.Mental stress in the workers of cement industries of HIE

Minors Injuries

Due to slip, trip, fall from less height, low electric shocks, crushing, shearing, cutting, entanglement, trapping, impact, stabbing, friction and high pressure fluid injection can cause injuries. Some a time a person due to his luck or some other factor do not injure a lot but little due to these hazards. Facts about minor injuries were alarming at the cement industry due to lack of appropriate safety measure like safety guards at machines, appropriate use of PPEs, supervisions, trainings etc. 21% workers have been injured during performing their job at Plant A, 9% at Plant B and 23% at Plant C. Here ratio of injured workers is less at Plant A than Plant B and C (Fig 11).

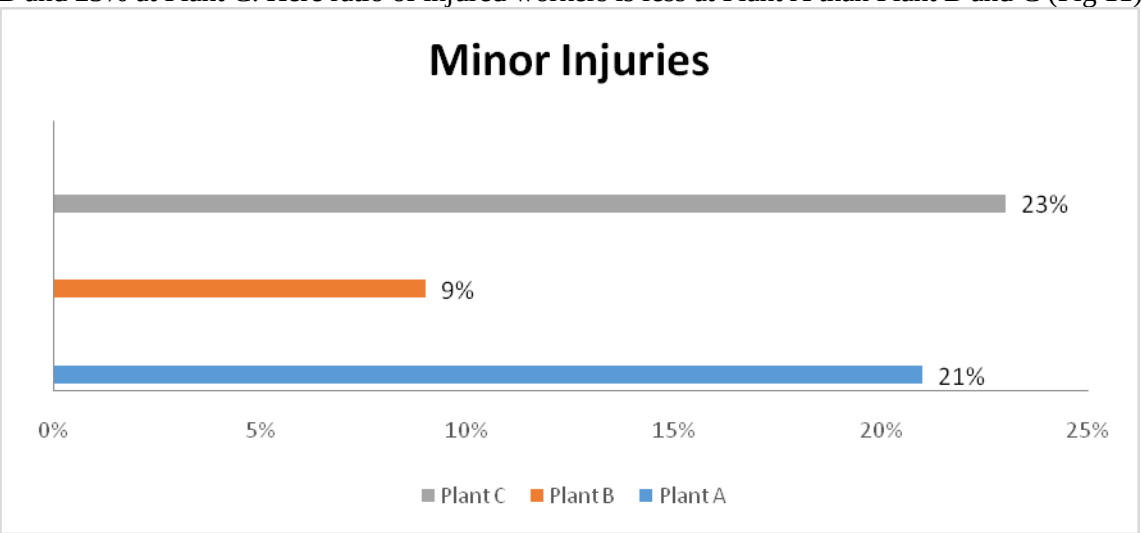


Figure.11Minor injuries in the workers of cement industries if HIE

Others Occupational Illnesses

In some workers some other illnesses were found due different hazards as due to vibration, Hand-Arm Vibration Syndrome, vibration white finger, nerve damage, muscle weakening, joint damage. Whole body vibration effects are common in the workers of cement industry. Beside this high blood pressure and some other blood disorder were also detected. Liver, gastrointestinal and some lymphatic system disorders are also detected in the workers. 13% workers at Plant A, 5% at Plant B while 7% workers at Plant C claimed these different illnesses (Fig 12).

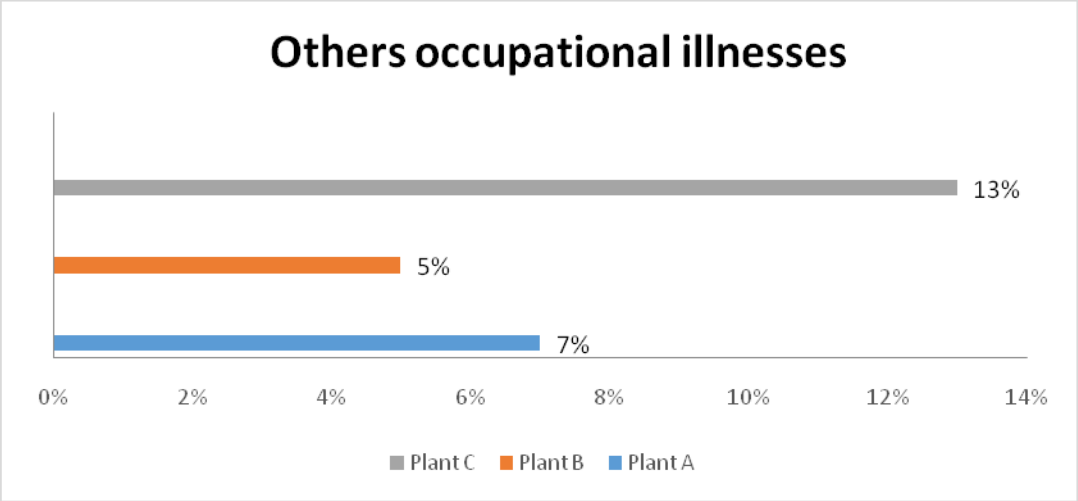


Figure 12. Other occupational illnesses in the workers of cement industries of HIE

Healthy Workers

Very few of number of workers claim to be fit and healthy while working in the cement industry. Due to poor OHS MS and a its improper implementation work related disease are very common in the all three plants due to hazards like, dust, noise, machines etc.25% at Plant A, 32% at Plant B and 22% at Plant C claim to be fit and healthy.

Its mean that 75% workers at Plant A, 68% workforce of Plant B and 78% of Plant C is effected by the occupational diseases (Fig 13). It is very alarming situation for the management as well as the government law enforcement agencies.

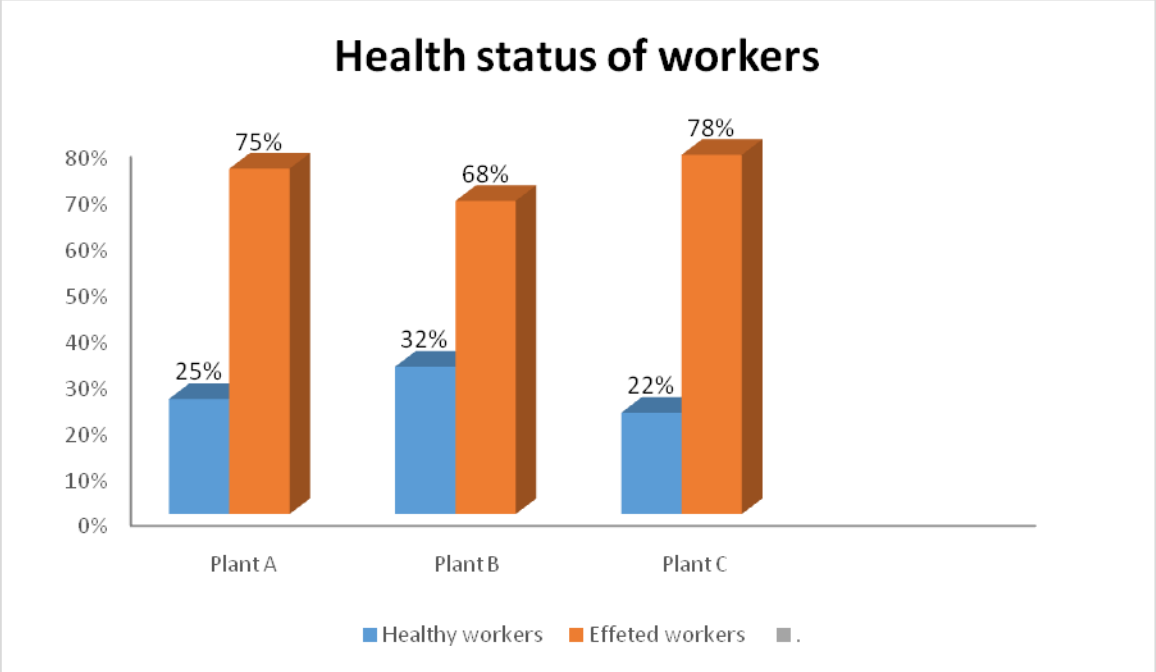


Figure 13.Health status of workers in the cement industries of HIE

Accident Rate And Cost

Accidents

An unplanned, unwanted event which leads to injury, damage, or loss is called as Accident. An accident has a potential to cause injury or death of workers as well as damage to equipment, material and building. The main focus of the OHS MS is to reduce the number and severity of accident. Only a good and properly implanted management system can achieve the goal of reduce number of accident at workplace. There are lot of consequences of accidents on the employer and employees. Where an employee gets rid of his breath there an employer bears a lot of financial loss both in the form of direct and indirect cost. In the most of developing countries it is thought about OHS it is a useless and costly exercise but the researches showed that investing little on OHS can save from the financial loss caused by accident in the direct and indirect way.

Accident Rate

These are accidents with a lot of negative consequences on workers like death, severe injuries, loss of organs, on equipment and material like total destruction, major fault of machines, and burn of material and collapse of buildings. In the cement industry major accidents in which one or more fatalities occur are very common due to negligence of proper OHS measures at the workplace. Accidents according to death and injuries are discussed below at the three plants of Cement Industry HIE in last year June 2014 to June 2015 (Table 04).

Table 4.Accident rate in the cement industries of HIE

Consequences	Plant A	Plant B	Plant C
Deaths	5	3	3
Severe Injuries	44	27	52
Loss of organ	21	19	17
Minor Injuries	173	72	210

5 people lost their life during the earning livelihoods for their families at Plant A, 3 workers at Plant B and 3 workers at Plant C. Height fall, fall of material, electric shocks, accidental start of machine and machine entanglement are major reasons of these fatalities. 44 workers at Plant A, 27 at Plant B and 52 at Plant C were severely injured during the different accidents occur at the plants. Severe injuries mean those injuries due to which a workers remain at hospital for a week or more. 21 workers lost their body organ including fingers, hands, arms, feet or legs due to ejection of machine parts, entanglement, and accidental start of machine during the maintenance. A significant numbers of workers minor injured during different accidents like slip, trip, material fall, machine in contact, collision with vehicle etc.

According to level of severity accidents are discussed in major and minor type. At Plant A, 6 major and 72 minor accidents were observed at Plant B, 3 major and 43 minor accidents while 8 major and 113 minor accidents were registered at Plant C (Table 05).

Table 5. Types of accidents

Type of accidents	Plant A	Plant B	Plant C
Major	6	3	8
Minor	72	43	113

Cost Of Accident

There are two major costs are associated with an accident direct and indirect cost. Direct costs are those cost which are billable and directly linked with accident including medical cost, rehabilitation cost, compensation cost and Costs for repair, replacement of damaged equipment/materials. While indirect costs are non-billable and linked with the consequences of an accident. The volume of indirect cost is 2 to 20 time greater than direct cost and while investigation the actual cost of an accident indirect costs are also consider with direct cost (Sun *et al.*, 2006). Indirect cost may include Loss of staff from productive duties in order to investigate the incident, formulate reports, commence hospital visits, deal with relative, and attend court minutes, Loss of staff confidence (which impacts on productivity, quality and efficiency),Cost of

remedial actions following an investigation, Acquiescence with any enforcement notice served, Cost of employing and training temporary or replacement labor, General complications in recruiting and retaining staff as indirect result of accident, Loss of goodwill of customers following delay in production and satisfying orders, Activation of penalty clauses for failing to meet delivery dates, Damage to public image and business reputation, Damage to industrial relation, perhaps leading to industrial action, Strikes (Mangan,1993).

Unfortunately, only direct costs are considered in the most of developing countries as in Pakistan. In the Documents of all three industries under study only direct costs are taken in account (Table 6).

Table 6. Costs of accidents

Type of accident PKRs	Average cost Plant A PKRs	Average cost Plant B PKRs	Average cost Plant C PKRs
Estimated cost of a major accident	712,300	720,230	690,780
Estimated cost of a minor accident	21,270	25,750	20,010
Total Estimated Cost	5,805,240	3,267,940	7,787,370

Through document the average cost of a major accident is 712,300 PKRs and 21,270 PKRs for a minor accident at Plant A, 720,230 PKRs for major and 25,750 PKRs for minor at Plant B. At Plant C the average cost of a major accident is 690,780 PKRs and for minor 20,010 PKRs.

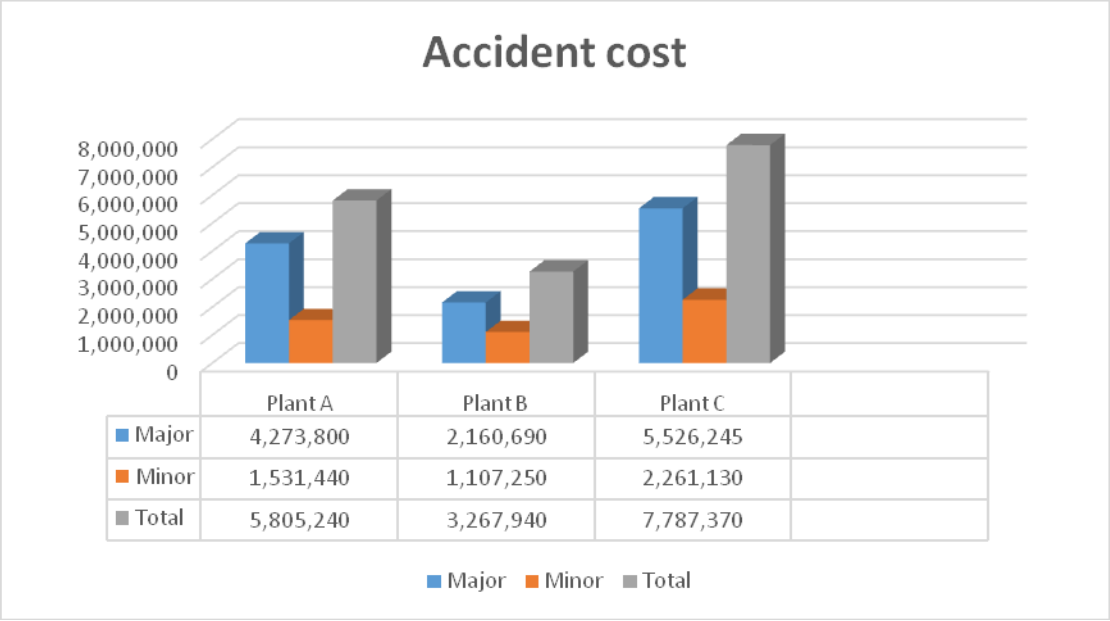


Figure 15 Average accident cost in the cement industries of HIE

Major accidents contribute more in the total loss per year caused by accidents.

Challenges In Adopting OHS

Economic Challenges

OHS is consider as a costly exercise though it is little bit costly but actually the investment in the OHS can reduce the financial loss caused by accidents and their consequences (Table 7).

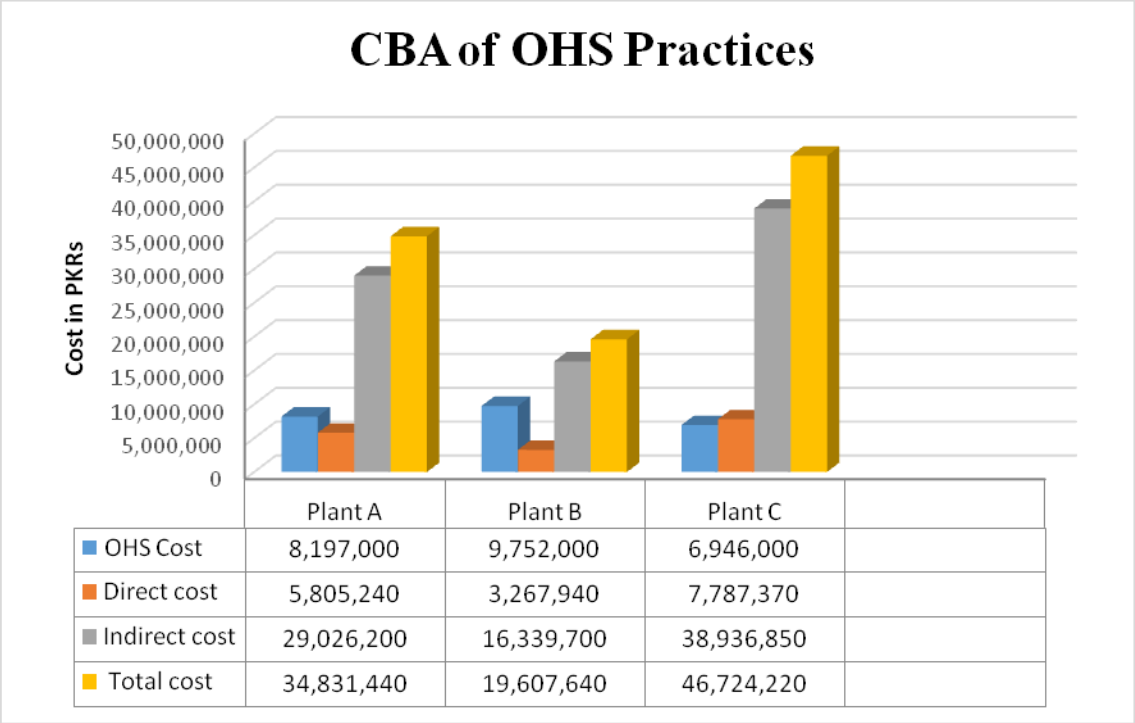
Table 7.Economic challenges to OHS

Safety measures	Cost at plant A PKRs	Cost at Plant B PKRs	Cost at Plant C PKRs
Pays	5,040,000	4,726,000	4,353,000
PPES	1,527,000	1,934,000	1,227,000
CPEs	1,323,000	2,156,000	1,056,000
Trainings	257,000	786,000	250,000
Others	50,000	150,000	60,000
Total	8,197,000	9,752,000	6,946,000

The table is about the annual expenditure of Cement industries in account of OHS. Plant B spends more than other and in result has very significant reduction in the accident rate. Same like Plant C spend less and have high rate of accident. From the above data it is also determined that spending on PPEs is good but spending on trainings is much better. Plant B spend more on trainings that why the worker of Plant B is more competent having good sense of work in a safe way. The total amount spent on OHS is not too much if it is compared with the annual fund of industry. It is less than 1% of the total fund.

Cost Effectiveness

It is also a major argue by different managers that OHS is more expensive than the loss caused by accidents. It is not true because they are comparing the OHS cost with direct cost only. The negligence of indirect cost lead to such arguments. According to different OHS scientist, Engineers the indirect cost of an accident is 2 to 20 time greater than direct cost. In the manufacturing industries of developing countries, the indirect cost is 5 times greater than the direct cost while in developed countries it is 10 times (Simonds and Grimaldi, 1956). According to this



	Plant A	Plant B	Plant C	
OHS Cost	8,197,000	9,752,000	6,946,000	
Direct cost	5,805,240	3,267,940	7,787,370	
Indirect cost	29,026,200	16,339,700	38,936,850	
Total cost	34,831,440	19,607,640	46,724,220	

Figure 16.Cost benefit analysis of OHS practices in cement industries of HIE

From the above graph it is very clear that the actual cost of an accident in the industry is much greater than the cost written in the documents. OHS is not too much expensive as compare to the total cost of an accident. In this cost the cost of work related illnesses is excluded. In developing countries management only focused on the direct cost of an accident which is some time lesser than the OHS cost which made the management's mind about the OHS practice as non-effective costly exercise.

Level Of Expertise

Another barrier in the adoption and implementation of OHS practices is lack of expert, experienced and qualified safety representatives. In the Cement industries of Hattar industrial conditions are same like other industries of Pakistan.

None of safety representative at all three industries have graduation in safety sciences or engineering. Only 2 officers at Plant A and Plant B have international certification of OHS like NEBOSH and OSHA. While at Plant C even the head of safety department does not possess any international certification. Local certifications from Trade Testing Boards (TTB) are common in all plants under the study. 4 safety officers at Plant A, 1 at Plant B and 5 at Plant C do not have any certifications or diploma in safety. Same conditions are in the experience of safety officers only Managers have some experience all other representative are almost fresh in the field (Table 8).

Table 8.Status of expertise in the cement industries of HIE

OHS education	Plant A	Plant B	Plant C
Graduate in OHS	0	0	0
International Certifications	1	1	0
Local Certifications	6	7	3
None	4	1	5

Willingness and Conflicting Demands

Most of the managers and workers are not willing in the adoption of OHS practices. Managers due to conflicting demands and to full fill the productivity demands neglect OHS while workers due to lack of awareness and trainings think OHS as useless practices.

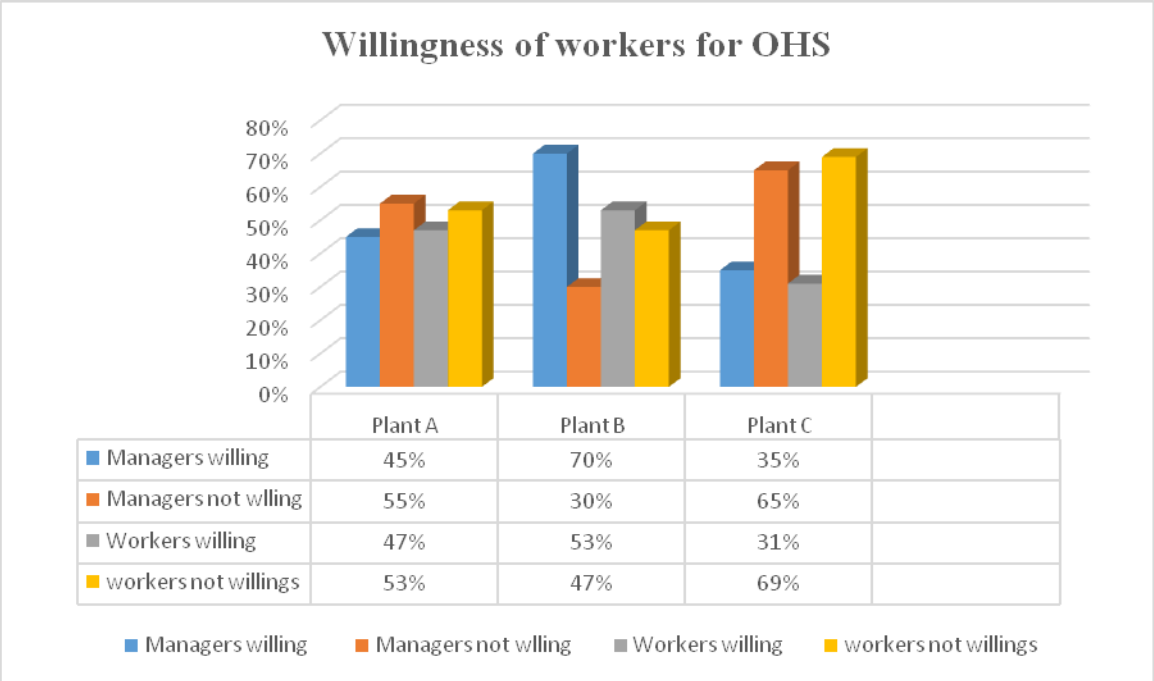


Figure 17. Willingness about OHS in the cement industries of HIE

45% managers at Plant A show a positive response towards the implementation of OHS and think it necessary and rest of 55% do not show a good response for OHS. According to these managers OHS reduce the productivity and wastage of time every worker is responsible his own safety. 53% workers at Plant A refuse to wear PPEs and to attend the safety trainings. The conditions are much better in the Plant A, 70% managers think safety as an integral department in the industry and show their positive attention towards the OHS. 53% workers at Plant B have positive

attribution towards the OHS. The conditions are worst in the Plant C almost 65% workers refused to significance of OHS they give more priority towards the production. Same conditions are in the workers 70% workers refuse to wear PPEs and to coordinate with safety representative.

Conclusion

The study concludes that the safety situations in the cement industries of HIE are not satisfactory. A lot of workers in the industries are facing occupational illnesses and injuries while the industries are bearing financial loss in the form of direct and indirect cost. The key reason behind the worst situations of OHS is the poor management of OHS.Due to lack of proper management of OHS and implementation of suitable of control measure the workers in the cement industries of HIE are facing a lot of work related illnesses including respiratory problems, skin problems, hearing and eye problem, work related muscular disorders etc. very few workers claim be to fit and healthy while all other have some health problem caused by the work and work environment. Accident rate in the cement industries is also too much high causing injury, organ loss and death in workers. While equipment, material and time loss to the industry.The main challenges in the adoption of good OHS practices are cost of OHS, behavior of workers and management towards the OHS, lack of competent safety representatives. At all three plants most of managers think that OHS is not cost effective.

Finally, through this study it was concluded that better the industries those have better OHS MS they have low accident rate and occupational diseases. At Plant B, the OHS MS was better than other two plants in result the rate of accident, loss caused by accident and work related illnesses were also lesser than other plants at Plant B. And the cost of OHS is much smaller than cost of accidents which can cause by lack of OHS practices.

References

Ahasan, M. R., Hannan, M. A., Uddin, Z., & Khaleque, A. (1998). Critical issues for ergonomics development as well as occupational safety and health measures. *Annual Paper Meet*, *98*, 269-276.

Barratt-Pugh, L., & Bahn, S. (2009). What's a life worth?: The values placed on safety. *Journal of Occupational Health and Safety, Australia and New Zealand*, *25*(5), 393.

Chunxiang, W. (2012). Safety Responsibilities for Owner and Example in Public Works. *Procedia Engineering*, *43*, 523-527.

Dorman, P. (2000) *'The economics of Safety, Health and Wellbeing at work'*. Geneva International Labor Organization.

Feszterová, M. (2014). Dangerous Substances and Processes: Consideration of the Subject within the Educational Process. *Procedia-Social and Behavioral Sciences*, *116*, 1176-1180.

Flin, R., Mearns, K., O'Connor, P., & Bryden, R. (2000). Measuring safety climate: identifying the common features. *Safety science*, *34*(1-3), 177-192.

Frazier, C. B., Ludwig, T. D., Whitaker, B., & Roberts, D. S. (2013). A hierarchical factor analysis of a safety culture survey. *Journal of safety research*, *45*, 15-28.

Mangan, J., & Mangan, J. (1993). *The economic costs of industrial accidents in Queensland*. University of Queensland, Department of Economics.

Marucci-Wellman, H. R., Courtney, T. K., Corns, H. L., Sorock, G. S., Webster, B. S., Wasiak, R., & Leamon, T. B. (2015). The direct cost burden of 13 years of disabling workplace injuries in the US (1998–2010): Findings from the Liberty Mutual Workplace Safety Index. *Journal of safety research*, *55*, 53-62.

Mendes, P. A., Hall, J., Matos, S., & Silvestre, B. (2014). Reforming Brazil′ s offshore oil and gas safety regulatory framework: Lessons from Norway, the United Kingdom and the United States. *Energy Policy*, *74*, 443-453.

Nastiti, A., Prabaharyaka, I., Roosmini, D., & Kunaefi, T. D. (2012). Health-associated cost of urban informal industrial sector: an assessment tool. *Procedia-Social and Behavioral Sciences*, *36*, 112-122.

Sarı, F. Ö. (2009). Effects of employee trainings on the occupational safety and health in accommodation sector. *Procedia-Social and Behavioral Sciences*, *1*(1), 1865-1870.

Simonds, R. H., & Grimaldi, J. V. (1956). *Safety management: Accident cost and control*. RD Irwin.

Smallman, C., & John, G. (2001). British directors perspectives on the impact of health and safety on corporate performance. *Safety science*, *38*(3), 227-239.

Smith, G. S., Wellman, H. M., Sorock, G. S., Warner, M., Courtney, T. K., Pransky, G. S., & Fingerhut, L. A. (2005). Injuries at work in the US adult population: contributions to the total injury burden. *American Journal of Public Health*, *95*(7), 1213-1219.

Sun, L., Paez, O., Lee, D., Salem, S., & Daraiseh, N. (2006). Estimating the uninsured costs of work-related accidents, part I: a systematic review. *Theoretical Issues in Ergonomics Science*, *7*(3), 227-245.

Takala, J. (1999). International agency efforts to protect workers and the environment. *International journal of occupational and environmental health*, *5*(1), 30-37.

Tariq.S.P.(2003). Country Profile on occupational health and safety in Pakistan, International Labor Organization ILO.

Verbeek, J., & Ivanov, I. (2013). Essential occupational safety and health interventions for low- and middle-income countries: An overview of the evidence. *Safety and health at work*, *4*(2), 77-83.

Yoon, S. J., Lin, H. K., Chen, G., Yi, S., Choi, J., & Rui, Z. (2013). Effect of occupational health and safety management system on work-related accident rate and differences of occupational health and safety management system awareness between managers in South Korea's construction industry. *Safety and health at work*, *4*(4), 201-209.

Zhang, Q. (2012). Occupational injury occurrence and related risk factors among Chinese migrant workers. *Procedia Engineering*, *43*, 76-81.