Construction Safety Management in Developing Countries: A Case Study of Jordan

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Abstract

The objective of this paper is to explore safety management in the construction industry in a developing country like Jordan. The final goal of the research is to recommend actions that contractors can follow to make construction sites safer. It will also recommend actions that the governmental officials should take in order to achieve the same goal. For this purpose data was collected using two methods. The first was by means of a questionnaire that was distributed to the construction workers of those companies that were trying to implement safety on their sites. The second method was through personal interviews with: (1) the Director of the Occupational Health and Safety Department in the Ministry of Labor, (2) three managers of privately owned construction companies, and (3) the Head of Injury Division at General Social Security Establishment. It was concluded that only few contractors were trying to implement safety measures at their sites. It was also concluded that despite the considerable amount of safety laws and legislation, in terms of quality and quantity, the enforcement of such laws is rather weak.

Introduction

Construction accidents' costs are increasing in many countries throughout the World. In the United States for example, cost of accidents has risen from 6.2%, estimated in the early eighties, to a range that by the mid nineties was estimated to be between 7.9%, as conservative estimate, to 15% as pessimistic estimate (Everett & Frank, 1996). In most developing countries, however, such costs are difficult to obtain since the occupational safety (including safety in construction) is not the top concern of either owners, officials, contractors, or workers.

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In most countries, contractors are required to buy workers' compensation insurance. In addition, they have to insure the whole project against many dangers that may occur to the project itself including workers, material, finished work, third party liabilities, etc. In Jordan contractors are also required to insure their projects against these dangers. The exception is that contractors do not have to get a workers' compensation insurance, since the General Social Security Establishment (GSSE) compensates workers who are under its umbrella for the incurred medical cost and/or loss of days that result from work related accidents. In addition, the Department compensates affected workers for cases of death, partial disability, or complete disability.

Regardless of insurance type, many important cost items resulting from accidents are not compensated for due to the difficulties in their estimation. Some of these items are: (1) The rising costs of insurance premium especially for those contractors who has bad safety records. In this regard, any deterioration in the contractor safety performance is reflected upon his insurance cost and, hence, affects his competitive edge. (2) The cost of lost opportunities due to the fact that increasing number of owners, when evaluating contractors during the prequalification process and/or during contract award are considering safety records as one of the evaluation criteria (Samelson & Levitt 1982). In some oil projects in the USA, for instance, contractors with poor safety records were not even allowed to participate in bids regardless of their qualification or price (Harper & Koehn, 1998). (3) Cost of work stoppage in order to take care of the injured worker. (4) Cost of lost administrative time and other resources in reporting the accident, making the investigation, and arranging for replacement of the injured person by someone who may not be as productive. (5) Cost of losses due to both schedule disruption and lower productivity resulting from low morale that prevails among workers after accidents have occurred. (6) Bad publicity. (7) Cost of low productivity of the injured worker upon his immediate return to work since he may not function in a productive manner as before the accident.

Another significant cost that cannot be estimated yet is the human side of the problem; the sufferings of the injured worker and/or his family that may last for a long time. This aspect of the problem is a vital factor in safety that should always be remembered and taken into account.
Objectives of the Study

The major objective of this research is to explore how safety measures at construction sites in Jordan are undertaken. It also seeks to increase the level of awareness of contractors, officials, managers and workers in the importance of safety. It is thought that the objective of this research can be achieved by examining how workers, officials, and contractors perceive safety issues in construction industry. For this purpose, safety issues were discussed with those parties through: a questionnaire that was conducted with workers; interviews with officials representing the Department of Health and Occupational Safety and GSSE; and interviews with managers of three construction firms.

Literature Review

(a) Some of safety research in developed countries

Levitt & Parker (1976) explored the practices and policies of some top managers in companies with outstanding safety record to those of managers in companies with poor record. Hinze (1981) and Hinze & Gordon (1979) showed that the psychological construction-site environment directly influence the safety performance of individual workers. Turnover and supervisory policies regarding new workers were found to affect safety in construction--companies with lower turnover of workers were found to have better safety records (Hinze, 1978). Also, various levels of management have a significant impact on safety performance by their particular methods of dealing with new workers--a closer relationship between management and the new workers is beneficial for work safety (Hinze, 1978).

Hinze & Pannullo (1978) found that good safety performance tends to occur in those companies that have closer job control over their projects. The results of their study indicated that open communication channels between various jobs and company personnel lead to safer job performance. As a result of the study, they concluded that factors that promote good job control and good safety performance are more readily realized in the smaller contracting firms.

A study was conducted to determine how work practices and job policies of field supervision in construction affect the safety performance of workers on construction projects (Hinze & Parker 1978). Jaselskis et al. (1996) correlated quantitatively the companies’ safety performance in terms of numerical profiles with those qualitative factors that are important to safety successful outcomes. They recommended certain measures to achieve outstanding project safety performance.
Harper and Koehn (1998) in their case study of a construction company located in Southeast Texas identified seven important factors that were behind its success in reaching a zero injury rate during the previous two years prior to their research. These factors are summarized as: (1) Management is committed to safety programs that provide a safe and healthful workplace. (2) Increased employees involvement in all phases of site safety results in gaining more commitment from the employees since they are expected to execute something which they have developed or assisted in developing. In addition, they are often more aware of the inherited hazards in the work place than are employers. (3) Reduced labor turnover rates help lower injury rate. Maintaining a constant and stable work force, as much as possible, is the first step toward achieving this goal. This can be done by careful planning, not only at the project level but at the company level as well. (4) Good housekeeping procedures that are easily followed, monitored, and controlled by the company’s safety representative and the employee-safety committee. (5) Employment of safety training programs, including safety orientation programs designed for the new worker. (6) Preconstruction safety review that covers potential areas of concern for job sites involving process or other hazards to employees. (7) The use of appropriate safety equipment that reduces the risk of injuries.

Furthermore, they calculated the benefits and the costs associated with the safe workplace that was achieved in their company. They found that turning the job site into a safe place not only reduces workers’ insurance premium but increases labor productivity as well. According to their estimates, the cumulative net savings for the period between 1992 and 1996 reached $493,854.

(b) Some of safety research in developing countries

Construction safety in developing countries is not taken seriously as it should be. In this regard, the following major problems that face developing countries like India are (Koehn, et. al., 1995):

(1) Many construction firms do not have effective safety programs; for the majority of contractors, however, maximizing profit is the prime concern. Unsafe conditions exist on many sites, both large and small, and laborers are subjected to numerous hazards.

(2) Communication problems related to different languages, religion, culture tend to inhibit safety on work sites. (In Jordan, however, this problem may not be profound as in other Middle Eastern countries, especially the Persian Gulf States in which the construction work-force is mostly foreign.)
(3) There is a significant difference between large and small contractors. Most large contractors do have a safety policy, on paper, but most employees are not aware of its existence. The few construction firms which exhibit a concern for safety procedures do so for the purpose of maintaining an excellent reputation and in order to be eligible to undertake international work in the Persian Gulf, Africa, and Russia.

(4) Employees and workers are required to learn from their own mistakes or experience. On many sites, no training programs for the staff and the workers exist; therefore, no orientation for the new workers is conducted, hazards are not pointed out and no safety meetings are held. Lack of training may cause worker, especially young ones, to take chances, and often do not follow safety norms or use personal protective equipment.

(5) Lack of medical facilities, shanty housing, and substantial substandard sanitation tend to exist on remote projects.

(6) Lack of understanding of the job and poor equipment maintenance are also major causes of accidents. Most laborers consider accidents as due to their own negligence, and accept that construction is a dangerous occupation.

(7) There is no regular check if the workers or staff members are under the influence of alcohol and drugs before the start of and during work.

To these problems, the authors can add the following:

(1) Lack of proper legal framework that regulates safety not only in construction industry but in other types of industry as well. Even if this framework exists, it lacks strict enforcement.

(2) Lack of proper specifications and standards that cover not only methods but also machines and instruments themselves to ensure safe performance.

(3) The construction industry in developing countries is more labor-intensive than that of the developed countries. It is expected, therefore, that the injury rate in the former countries is larger than that of the developed countries.

(4) In most developing countries there are no accurate and reliable statistics that can be used in research. Even if reliable statistics exist they are broad in nature, and of little use.

(5) There is a significant amount of accidents, and consequently their injuries, are not reported anywhere or in any form. This is due to the huge number of
unorganized small contractors who are not officially registered in Contractors’ Association, yet they employ more than half of the construction labor force.

(6) Many accept accidents as their fate. According to their believes, accidents cannot be prevented even if they try.

(7) The existence of a high illiteracy percentage among construction workers limits the benefits of many important written instructions, safety posters, and warning signs.

The literature survey in construction safety in Jordan revealed a lack of research in this area. Table 1 shows the contribution of the construction industry as a percentage in the accidents for the period 1990 - 1997. It is obvious that the Table demonstrates some data that is very general in nature.

In a study regarding safety in some factories located in the industrial centers of some cities in Jordan, Kloob (1993) found that, among the 30 surveyed factories, 70% did not provide their workers with helmets, 32% did not provide protective eye-glasses, 18% did not provide special protective shoes, 5% percent even did not have the first medical aid supplies. He concluded that: (1) only large companies have some form of structured safety programs; (2) most of the workers need training, both in the way they carry out their jobs and in safety measures; (3) a significant portion of surveyed companies do not provide their worker with protective equipment; and (4) some companies were understaffed with technical engineers and supervisors which increased the risk of injury due to lack of proper and timely work instructions.

<table>
<thead>
<tr>
<th>Year</th>
<th>Contribution to Injuries %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>19.46</td>
</tr>
<tr>
<td>1991</td>
<td>16.8</td>
</tr>
<tr>
<td>1992</td>
<td>6.7</td>
</tr>
<tr>
<td>1993</td>
<td>9.0</td>
</tr>
<tr>
<td>1994</td>
<td>10.55</td>
</tr>
<tr>
<td>1995</td>
<td>8.8</td>
</tr>
<tr>
<td>1996</td>
<td>15.1</td>
</tr>
<tr>
<td>1997</td>
<td>14.13</td>
</tr>
</tbody>
</table>

* Source: Ministry Of Labor in Jordan, Annual Reports

Methodology

The data for this research is collected by means of: (a) a questionnaire filled by construction workers; (b) a personal interview with the director of the Safety and Occupational Health Department in the Ministry of Labor-- the country’s highest
regulatory body in regard to safety measures and their enforcement, (c) interview with the Head of Injury Section at the (GSSE), and (d) interviews with 3 general managers of construction companies.

The questionnaire that was prepared by the authors, aimed at exploring the degree to which safety equipment is available and put into practice on the relatively large construction sites. It contained three major dimensions, each of which consisted of two or more related questions. The first dimension consisted of questions regarding whether the contractor provides workers with safety equipment such as helmets, gloves, protective glasses, etc. The second is whether workers themselves follow the basic safety instructions such as wearing protective clothes and using other safety equipment. It explores how workers perceived the importance of safety equipment in reducing accidents. The last of these dimensions is to explore some factors that may affect safety performance in terms of severity and rate of occurrence; in particular, the educational background and age.

The respondents were asked to indicate on a five-point scale whether they strongly agree, as being 1, and strongly disagree, as being 5, with the question statements. The questionnaire was distributed to 60 workers who work for three different relatively large construction companies. These companies were trying to apply safety measures on their construction sites for two reasons. Firstly, owners of some large projects pay for the safety measures that the contractors undertake. This is due to the fact that the contract documents of these projects (such as hospitals, five-star hotels, and commercial centers that are either prepared by reputable designers or financed by the international bodies) require minimum safety measures to be taken. Secondly, some of these companies were in the process of obtaining the ISO-9000 certificate, that stipulates the application of project's standards and construction norms in terms of quality and safety.

The second method of data collection was the personal interview with the manager of the Safety and Occupational Health Department in the Ministry of Labor. The manager was asked about the existence and enforcement of safety laws, instructions, and regulations on construction sites. The availability of some official statistics regarding the injuries in construction was discussed during the interview.

An interview was also conducted with the Head of the Injury Section in the GSSE with the purpose to explore the basis that is used when compensating workers for work related injuries and the way the GSSE classifies the statistical data they collect regarding construction work accidents.
Finally, interviews with the three managers of construction companies were aimed at exploring some safety factors related to problems, costs, and potentials.

Results

Of the sixty questionnaires that were sent to workers, 30 questionnaires were returned and analyzed. Table 2 shows the percentages of the responses to each question. It is important to note that this sample is limited to only some of the large construction companies who were trying to apply safety measures at their construction sites. Many other companies, unfortunately, were not trying to introduce any of the safety measures at their sites and, therefore, no effort on the researchers part was made to explore safety at such sites. In fact, the sight of construction workers on their job-sites without helmets or protective equipment is common place.

In regard to the first dimension which questions if the contractor provides the site with safety equipment, Table 2 shows that even among those companies who are trying to enforce basic safety measures, this commitment is still weak. This is evident from workers’ response to the questions related to this dimension; 56.7% indicated that the contractor did provide them with safety equipment; 83.3% indicated that contractors insist that workers use safety devices. It should be noted that 6.9% of the surveyed workers did not even know the availability of the first aid essentials on the site.

Table 2

<table>
<thead>
<tr>
<th>No</th>
<th>Question</th>
<th>Strongly agree %</th>
<th>Agree %</th>
<th>Don't Know %</th>
<th>Disagree %</th>
<th>Strongly disagree %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Workers always wear safety equipment</td>
<td>27.6</td>
<td>41.4</td>
<td>10.3</td>
<td>13.7</td>
<td>6.9</td>
</tr>
<tr>
<td>2</td>
<td>Safety equipment reduces injury rate</td>
<td>57.1</td>
<td>32.1</td>
<td>10.7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Safety equipment reduces the severity of injuries.</td>
<td>58.6</td>
<td>34.5</td>
<td>6.9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>The contractors makes safety equipment available to all workers</td>
<td>26.7</td>
<td>30.0</td>
<td>16.7</td>
<td>23.3</td>
<td>6.7</td>
</tr>
<tr>
<td>5</td>
<td>All workers wear work shoes</td>
<td>26.7</td>
<td>30.0</td>
<td>10.0</td>
<td>13.3</td>
<td>20.0</td>
</tr>
<tr>
<td>6</td>
<td>When needed, all workers wear protective glasses</td>
<td>16.7</td>
<td>40.0</td>
<td>23.3</td>
<td>13.3</td>
<td>6.7</td>
</tr>
<tr>
<td>7</td>
<td>When needed, all workers wear work gloves.</td>
<td>17.2</td>
<td>41.4</td>
<td>27.5</td>
<td>13.8</td>
<td>0</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>No</th>
<th>Question</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Don't Know</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>When needed, worker wear ear's protection.</td>
<td>13.3</td>
<td>36.7</td>
<td>26.7</td>
<td>13.3</td>
<td>13.3</td>
</tr>
<tr>
<td>9</td>
<td>Worker inspect safety equipment before using them.</td>
<td>20.0</td>
<td>30.0</td>
<td>16.7</td>
<td>26.7</td>
<td>10.0</td>
</tr>
<tr>
<td>10</td>
<td>There is an official safety inspection by Safety &amp; Occupational Health Dept.</td>
<td>13.3</td>
<td>33.3</td>
<td>30.0</td>
<td>16.7</td>
<td>6.7</td>
</tr>
<tr>
<td>11</td>
<td>During the inspection visits, do they issue warning to the contractors?</td>
<td>20.0</td>
<td>23.3</td>
<td>13.3</td>
<td>30.0</td>
<td>6.66</td>
</tr>
<tr>
<td>12</td>
<td>If violations are repeated, do they penalize the contractor?</td>
<td>20.0</td>
<td>26.7</td>
<td>20.0</td>
<td>23.3</td>
<td>10.0</td>
</tr>
<tr>
<td>13</td>
<td>Contractors insist that workers abide by instruction rules.</td>
<td>33.3</td>
<td>30.0</td>
<td>10.0</td>
<td>6.7</td>
<td>0.0</td>
</tr>
<tr>
<td>14</td>
<td>Safety equipment hinders work.</td>
<td>23.3</td>
<td>23.3</td>
<td>6.7</td>
<td>16.7</td>
<td>30.0</td>
</tr>
<tr>
<td>15</td>
<td>Safety equipment are extra cost to contractors.</td>
<td>30.0</td>
<td>23.3</td>
<td>16.7</td>
<td>16.7</td>
<td>13.3</td>
</tr>
<tr>
<td>16</td>
<td>The contractor provides the site with first aid equipment.</td>
<td>66.7</td>
<td>26.7</td>
<td>6.7</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>17</td>
<td>There is a relationship between assigned volume of work &amp; Safety.</td>
<td>26.7</td>
<td>36.7</td>
<td>10.0</td>
<td>16.7</td>
<td>6.7</td>
</tr>
<tr>
<td>18</td>
<td>There is a relationship between qualifications and safety.</td>
<td>30.0</td>
<td>46.7</td>
<td>16.7</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td>19</td>
<td>There is a relationship between age and safety.</td>
<td>13.3</td>
<td>46.7</td>
<td>20.0</td>
<td>6.7</td>
<td>3.3</td>
</tr>
<tr>
<td>20</td>
<td>There is a relationship between qualifications and accident severity.</td>
<td>20.0</td>
<td>56.7</td>
<td>16.7</td>
<td>6.7</td>
<td>0.0</td>
</tr>
<tr>
<td>21</td>
<td>There is a relationship between age and accident severity.</td>
<td>13.3</td>
<td>46.7</td>
<td>16.7</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td>22</td>
<td>After all, safety equipment is a must in the construction site.</td>
<td>65.5</td>
<td>27.6</td>
<td>6.9</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

From the analysis, it can be noted that workers' commitment to follow the basic safety instructions, which is the second explored dimension, was not strong. Even though most workers agree or strongly agree that safety equipment is a must in the construction site (93.1%) and that safety equipment reduces both the injury rate (89.2%) and the severity rate (93.1%), they are not committed to follow safety rules and instructions. This is evident from the high combined percentage of workers who were undecided, disagreed, or strongly disagreed with the question statement that workers always wear safety equipment (30.9%). Moreover, the workers' commitment toward wearing safety equipment was not strong. Only 56.7% of the interviewed workers indicated that they wear work shoes when needed; 58.6% indicated that workers use protective gloves when needed, 56% indicated that workers wear protective glasses; 50% indicated that workers wear ear's protection when needed; only 50% of workers inspect their safety equipment before using them. It is noteworthy that of the surveyed workers, 53.3% do believe that safety
equipment is an extra cost to the contractors while 46.7% think that this equipment hinders work.

As for the influence of workers' qualifications on safety performance, the analysis revealed that 63.4% and 76.7% of the respondents indicated that there is a relationship between worker's qualification and both the injury and severity rate, respectively. Also, 76.7% and 60% said that there is a relationship between worker's age and both the injury and severity rate, respectively. Finally, 63.4% indicated that the volume of the assigned work would affect safety performance.

The data in the Table suggests that site visits by the safety inspectors of the Occupational Health and Safety Department are infrequent or rare; only 46.7% of the surveyed workers acknowledged these visits; 43% indicated that during these visits the safety officials issue warnings for spotted violations; and 46.7% indicated that a fine penalty is placed against the contractor in case these violation(s) are repeated.

2. Interview with the Occupational Health and Safety Department.

This was carried out in order to take a close look at the way that safety laws, instructions, and measures are being implemented. The questions that were asked focused on the latest laws and instructions passed by the parliament or imposed by the Ministry of Labor. Questions were also asked about the frequency of visits undertaken by inspectors to construction sites. Moreover, some statistical data regarding accidents in construction sites were discussed. Following the interview, the authors concluded that:

- **Labor Law** which has been in effect since 1996 and its subsequent corresponding guidelines, details, and instructions has laid solid foundation to more strict safety measures in all sectors of economy including construction. In this law, for example, the Minister of Labor has the authority to shut down, partially or completely, any establishment that violates any item in the safety section of Labor Law. Based on this law, Ministry of Labor issued a package of instructions and details once implemented, a big improvement in safety performance is expected. For example these regulations stipulate that a full-time safety officer should be employed in each establishment with 51 or more employees. Moreover, such establishments should form a safety committee that should meet, at least, once a month to discuss safety matters, latest instructions, causes of accidents and prevention, etc.
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- Unfortunately, the number of inspectors who are employed by the Ministry is rather small relative to the wide range of establishments in different types of industry that are to be inspected. Construction, probably, is the least inspected type of industry since construction sites are very large in number, widespread and/or remote in location, mostly small in size, and relatively short in duration.

- The policy of assigning one-inspector to one-type of industry is neglected; the available inspectors, even in one day, may inspect two entities with different types of industry.

3. Interviews with Managers of Some Construction Companies

The results of the interviews conducted with three managers of some construction companies were:

- Many contractors are not aware of the existence of the safety laws and instructions.

- The law enforcement with regard to safety in construction is practically non-existent. The visits of the safety officials to their construction sites are very rare. This is evident from the construction sites of two of the interviewed managers were without any applications of even the most basic measures as wearing helmets, or protective shoes.

- In the majority of the construction sites, no work training for better safety performance or safety orientation for the new worker is conducted.

- One contractor indicated that he is applying all required safety measures in order to obtain the ISO-9000 certificate. He indicated that his company is firm in applying safety measures so that a productive worker may loose his job if he repeatedly violates safety measures.

- There are many unreported minor accidents that do not involve off-the-job leave and require only minor local attention or, at the most, can be treated without hospitalization. The reason for contractors not to report such accidents is that the costs of filing claims due to lengthy bureaucratic procedures in both the insurance companies and in the Social Security Department is relatively high in comparison with the cost of these accidents.
4. Interview with an Official in The GSSE

The reason for conducting this interview is that the GSSE plays the role of an insurer to cover all costs incurred by workers in case of a work related accidents. The GSSE charges all employers a fee of 2% of the workers’ wage or salary to compensate their workers if a work-related accident occurs. The results of this interview were:

- The fee are fixed regardless of the employer safety performance. It is obvious that with such a policy, there is little incentive for employers to reduce accidents.

- The GSSE has no authority to inspect work sites. If the GSSE feels that a certain employer has an abnormal injury rate, it will report him to the Ministry of Labor; the only official body that is authorized by law to take action against those who violate safety norms and instructions.

- At the time when the interview was conducted, the GSSE was developing a statistical tool to monitor and control employers safety records. It is hoped that such information will be made public to all interested parties.

Conclusions

From the above, it can be noted that construction safety in developing countries is lagging behind when compared with that of the developed countries. Jordan is no exception; most of construction sites are without minimum acceptable safety standards. It seems that contractors are occupied with other problems, while safety, according to their believes, is among the least significant problems they face. On the official side of the problem and despite the considerable amount of safety laws and legislation the enforcement of such laws is rather weak. This is evident from the rare visits by the inspectors of The Ministry of Labor to construction sites in Jordan. During data collection, it was noted that many important data concerning safety in construction is not available

Recommendations

Serious effort has to be exerted at both the official and the contractor’s level. The followings are the major steps that can be taken.

a) On the official level

The major step towards safer work sites is to introduce safety laws and instructions that cover in details all aspects of safety. Fortunately, in Jordan, such
laws and instructions are in effect since 1996 when they were globally modified according to the latest development in the country. The major obstacle, however, is their enforcement.

In the absence of a suitable detailed statistical data, it is difficult to make inferences about latest trends in safety matters. The need for such data is obvious for all involved parties, whether they are governmental officials or researchers.

It is hoped that the GSSE will modify their law by eliminating their role in workers' compensation, leaving this assignment to insurance companies.

b. On the contractors' level

An active and sincere management leadership plays a very important role in safety procedures. Companies with low rates of accidents consider safety as a special concern. Through good organization better safety records can be achieved. Establishing a safety department within the contractors' companies may be the first step toward better safety. This department should be responsible for safety inspection, analysis, investigating, reporting, and training for better safety. The work of this department should act as a help to site engineers and foremen rather than punishment or blame. This department might be a separate one with its own engineering and clerical staff--as in big companies, or be a division of some other departments. Most companies attach a safety division to the personnel manager. Regardless of the organizational structure of the company, the safety department must have enough authority and the required resources to carry out their duties in a professional manner without compromise, even with high-ranking personnel. The personnel of the safety department should be specialized, technically highly qualified, and well-trained in safety works. In order to provide a good and an up-to-date training, they need also to train and continuously develop their knowledge. Small companies may not have a safety department as such, but may have consultants employed on a part-time basis.

Motivating workers towards better safety on their construction sites is an important step. In this regard, the key factor in improving safety record is through increased employee involvement in all phases of site safety.

Analyzing and finding out the root causes of the accidents are very important. Poor analysis may increase the chances of accident repetition. The results of accidents analysis should be prepared and reported to top management. The report should be accurate and specific containing clear comparison of different indicator
using base of standard units—such as: average lost time per accident, average cost, frequency rate of accidents per certain number of worked man-hour, etc. These reports should be given high priority from top management and a prompt and effective action should be taken. Management should make sure that their decisions in this regard are implemented. The safety department must play an active role in immediate implementation of these decisions. The means of transmitting such decisions should be simple, clear for every anticipated level of education. The instruction should contain analysis, causes, and measures that should be taken in order to avoid similar accidents.

Frequent visits to the construction site help top management to perceive the size of the problem, while lack of them leads to less appropriate decisions. In order to emphasize the importance of safety to site managers, it is important that during these visits, top management should portray a concern about safety measures which is equal to their concern about cost, schedules, etc.

References


إدارة السلامة المهنية في قطاع الإنشاءات في الدول النامية - حالة دراسية من الأردن

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ملخص

يهدف هذا البحث إلى استطلاع السلامة المهنية في قطاع الإنشاءات في الدول النامية كالأردن مثلاً وذلك بهدف وضع مقتراحات تؤدي إلى تقليل الحوادث في المواقع الإنشائية. كما تهدف أيضاً إلى اقتراح خطوات مماثلة يجب على المسؤولين إتباعها من أجل تحقيق نفس الهدف. وفي سبيل إنجاز هذه الدراسة، فقد تم جمع المعلومات بالأساليب الأولى من طريق توزيعها على عملاء بعض الشركات التي تقدم إلى تطبيق السلامة المهنية في عملها. الثاني من خلال ثلاث مقابلات شخصية تمتع مع (١٠) مدير دائرة السلامة والمصدقة المهنية في وزارة العمل، (٣) ثلاث مزايا شركات مقاولات، (٣) رئيس قسم الإصابات في المؤسسة العامة للضمان الاجتماعي.

ومن النتائج التي تم التوصل إليها أن عددًا محدودًا من المقاولين يطبق شروط السلامة المهنية في مواقفهم. وبالرغم من وجود قوانين وتشريعات لأسسها من حيث شمولية التنفيذ ونوعيتها، فإن تطبيق مثل هذه التشريعات لازال محدوداً. 


