Occupational Injuries Among the Workers of Tema oil Refinery and Safety Issues.

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Abstract: - A case- study research was carried out at Tema oil refinery to find out the extent of accidents among the workers how to enhance safety issues. Injury data were collected and processed in terms of deaths, near misses, temporal disability, permanent disability and how they were treated. The study revealed that about 80% of the workers know much about safety issues but accidents keep increasing each year. It also shows that management does not pay much attention to how much an injury could cost the company in terms of money. This is because they do not calculate time lost as money lost. The paper therefore suggested how to improve on safety issues. The paper also made some analysis on time lost how it will cost the company in terms of money and reputation.

Key-words: - Safety Issues, Occupational Injury, TOR (Tema Oil Refinery), Near Misses,

1 Introduction
The fact that by preventing accidents we are preventing human suffering, misery, and deprivation is a fine heart-warming thing. But the main driving force behind the industrial safety movement is the fact that accidents are expensive, threaten the environment and sustainability, especially in the regions. Substantial savings can be made by preventing them. An appeal to the emotions is effective at times, but the kind of persistent day by day effort necessary to eliminate preventable injuries is most surely obtainable by enlisting on the side of safety the ever-present desire and necessity for reducing waste. Everyone can easily see that accident costs are wholly waste. It is not so easy to see how large these wastes are. Compensation and medical costs (spoken of as direct costs) are obvious. It has, however, taken careful studies by experienced cost accountants and industrial executives to show how large the other costs (spoken of as indirect costs) are. It is now clear that on the average the indirect costs of accidents in industry are not less than four times the direct costs. The items of costs likely to be present in each case of accidental injury are:
  - Compensation
  - Medical expense
  - Lost time of injured employee (day of injury).
  - Lost time of fellow employees who stop work. (To aid injured worker, Out of sympathy or curiosity, for other incidental reasons).
  - Time of foreman, executives, or other staff personnel. (Assisting injured employee, Investigating cause of accident, Arranging for continuance of injured employee's work, Selecting, training, or breaking in new employees, Preparing accident report, Attending hearings on injury (serious or contested cases).
  - Lost production due to upset, shock, or diverted interest of workers.
  - Lost production due to stoppage of machine or process in charge of injured person.
  - Damage to machine, equipment, or material directly occasioned by accident.
  - Spoiled product or material due to emotional upset of fellow workers.
  - Lessened effectiveness of injured employee for a period after his return to work.
  - Business or good will lost through failure to fill order on time; lost bonuses; payment of forfeits for non-delivery, etc.
• Legal expense, court fees, expense of preparation of case, settlements, judgments, etc., in cases contested at law.
• The employer's share of the loss and expense to society in each case of death or continued loss in earning power.

The loss of human values involved should also be included even though no definite money figure can be set down for it. Any person who takes the trouble to trace a number of injury cases through the experience of the injured workers and their families become profoundly impressed with the seriousness of this side of the accident picture. Every permanent disability lessens the desirability of the victim in the labor market. His earning power is usually reduced. His morale is lessened. His family suffers in the numberless and continuing ways in which families always suffer when their small income is cut still more. Graphic supporting evidence can be had in any average group of unemployed old men. The proportion of work-connected physical impairments usually run high and particularly so among those from high hazard industries as, for instance, wood and metal working, construction and mining.

1.1 Injury rates
In order to judge the effectiveness of any continuing activity one must have means of measuring results, a basis of comparison. Cost accountants think in terms of unit cost (cost per article, per pound, per gallon or per year). An important measure to the production executive is the number or amount produced per day or per man, the rate of production. Similarly one must have a means of judging safety performance. Obviously the injuries that the workers in any establishment or occupation suffer constitute a measure of its safety. In order to use this measure, however, we must take three things into consideration. These things are:

• The frequency with which the injuries occur, which is the "Frequency Rate."
• The seriousness of these injuries, which is the "Severity Rate."
• What injuries to count.

The unit of measure called "frequency rate" or "frequency" does this. It is "the number of lost-time injuries for each million man-hours worked." Written as a formula, it is:

\[ F = \frac{\text{Number of injuries}}{\text{Man-hours}} \times 1,000,000 \]  

1.2 Severity of injury
Now we come to the question of the seriousness of severity of injuries. Severity is measured by the time-loss caused and by the degree of permanent disability (if any) which results. Severity is the time loss per million man-hours. It is written in a formula:

\[ \text{Total days charged} \times \frac{1,000,000}{\text{Employee-hours of exposure}} \]  

2 Safety in the Industry.

2.1 The state's part in industrial safety
That the State has both the right and the duty to make sure that those who are employed within its industries are provided with reasonably safe work places is well established. However, it is now realized that the State can and should go farther than this. The great majority of injuries which workers suffer in industrial employment do not result from hazards. Instead, the great annual total of such injuries is, for the most part, built up injury by injury and day by day throughout the year from the almost endless variety of relative hazards that are involved in industrial operations.

The chief foes of safety are ignorance, indifference, and inertia. Good safety performances in industry must rest on a basis of managerial enthusiasm for safety. A good accident record is not particularly difficult to achieve. Those managements which become safety minded to an extent that they seriously and persistently undertake to eliminate preventable injuries from their employment always achieve at least a good standard of performance in this respect.

A competent prevention-minded inspection service maintained by the State is in position to place its effort where improvement is most needed. It can carry the needful informational service to every establishment in the State. The attitude of most management that fails to pay the proper attention to accident prevention is merely that of passive good will toward safety. They don't want their employees hurt, but they fail to take effective preventive action.

2.2 Management's part in safety
If really good practice in the elimination of preventable accidents is to be reached and held in any establishment, the top management must definitely
accept full responsibility and apply a good share of its attention to safety just as it does to any other undertaking of vital importance. Every kind of work that men do involves some degree of hazard and each occupation in question. Since all authority, determination of policies and executive direction must come from the management, the primary drive for safety must also. The management must want to eliminate injuries badly enough to make their prevention a vital part of all activities. Prevention must be given continuous attention along with such matters as cost, quality, and production.

Very briefly the more important definite things management must do to prevent accidents may be set down as follows:

- Provide safe plant, equipment and tools.
- Safeguard all machinery.
- Place no new machinery or equipment in operation until full attention has been paid to its safety.
- Plan and arrange all processes and operations with careful attention to safety.
- Maintain a system of inspection to discover correctible hazards.
- Maintain safety-minded supervision.
- Train, educate, and stimulate its employees to follow safe methods of work and take a sincere interest in the safety of themselves and their fellow workers.
- Investigate each and every accident to determine how best to prevent recurrence.
- Make full and prompt report to the proper authorities of all cases of injury.

such hazard produces its share of injuries. But, by the proper attention to safety, almost all the injuries which would otherwise occur can be eliminated regardless of the industry.

2.3 Employee’s part in safety.
The management cannot, however, do the whole safety job alone. Every worker must do his part to keep himself and his fellow workers from getting hurt. Some of the ways in which his help is most necessary are:

- Faithfully using all safeguards provided.
- B. Understanding and carefully following safety rules and safety instructions.
- Working earnestly on safety committees or other safety activities to which he may be assigned.
- Seeking always for the safe way of working on each job or activity.
- Watching out always for the safety of his fellowman.

3 Overview of safety management at the TOR
Data were collected processed and analyzed on the basis of the following variables; temporal disability, Permanent disability and deaths from the period of 1995 to 2005 as seen in fig 1. The analyzed data were used to conclude on important findings and to set necessary tasks.

Fig.1 human injury trend (2006 to 2016)  Source: safety department TOR
This study research was carried out at Tema oil refinery to find out the extent of accidents among the workers how to enhance safety issues. Injury data were collected and processed in terms of deaths, near misses, temporal disability, permanent disability and how they were treated.

The study revealed that about 80% of the workers know much about safety issues but accidents keep increasing each year as seen in fig 1. It also shows that management does not pay much attention to how much an injury could cost the company in terms of money. This is because they do not calculate time lost as money lost. The paper therefore suggested how to improve on safety issues. The paper also made some analysis on time lost how it will cost the company in terms of money and reputation.

In the year 2010 our accident statistic board indicated as listed below:

- Lost Workday Injury (LWI); - 8 x 8hours = 64hours.
- Restricted Workday Injury (RWI) - 0 = 0
- Medical Treated Cases (MTC) = 17cases
- Lost Time Accident (LTA) Number of days worked without accident = 245days.

This has been the best record since the introduction of the Key Performance Indication (KPI) system and it is the collective effort of the various departments that has enabled this success. It is therefore the target of the Safety Department to improve on the current records in the coming year 2011.

4 RECOMMENDATIONS

1. Sufficient training for workers on fire prevention
2. Occasional fire drills should be carried out to create awareness on how to behave during fire hazards.
3. Safety manuals should be posted on vantage points for workers to read
4. Regular inspections should be carried out to make sure safety rules are being followed.
5. Safety equipments should be checked regularly to be sure they are working well.

References