How to Reduce Accident in Human Work Organizations

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Abstract

Both the physical and the socio-psychological aspects of the work environment influence occupational safety and health. Each aspect has its own hazards to human health and safety. For the physical, it is diseases and accidents; the socio-psychological it is quality of work life and stress. Traditionally, only the physical environment has received the attention of most companies. However, companies are admitting to the impact of socio-psychological hazards on health and safety. This study reviewed works on how to minimize accident rate in human work organizations. Consequently, efforts to improve occupational health and safety must include strategies to remove accident hazards from human work environment.

Key Words: Accident, Human, Work, Organizations, Manager and Reduce.

Introduction

Safety and accident prevention concerns managers for several reasons, one of which is the staggering number of work-related accidents. David et al (1985), observed that safety commitment begins with top management. A safety minded manager, must aim to instill in workers the desire to work safely. Minimizing hazards, by ensuring that spills are wiped up, machine guards are adequate, and so forth, is important, but no matter how safe the workplace is, accidents will occur unless workers want to and do act safely. Neville (1995), posit that manager could try by closely watching each subordinate, but most managers know this won't work. In the final analysis manager best, and perhaps only alternative is to get workers to want to work safely. Thus, without the full commitment of all levels of management, attempts to reduce unsafe acts by workers will meet with little success. The first-line supervisor is a critical link in the chain. If the supervisor does not take safety seriously, it is unlikely that those under him or her will either be proned to accident.

Factors Affecting Occupational Accidents

According to Ivancevich et al (1985), "certain organizations, and even certain departments within the same organization, have higher occupational accident rates than others". Several factors such as these, explain this difference.

1. **Organizational Qualities:** Accident rates vary substantially by industry. For instance, firms in the construction and manufacturing industries have higher incidence rates than firms in services, finance, insurance, and real estate, (Susser, 1985). Small and large organizations, those with fewer than a hundred employees or more than a thousand, have a lower incidence rates than medium-size organizations. This may be because supervisors in small organizations are better able to detect safety hazards and prevent accident than those in medium-size ones. And larger organizations have more resources to hire staff specialists who can devote all their efforts to safety and accidents.
2. **Safety Programmes:** In the opinion of Jackson and Schuler (1983), "organizations differ in the extent to which they develop techniques,

programmes, and activities to promote safety and prevent accidents". The effectiveness of these techniques and programmes varies by the type of industry and size of organization. For instance, in large chemical films, greater expenditures for off-the-job safety, medical facilities and staff, safety training, and additional supervision are associated with decreased work –injury costs (Polletier, 1985). On the other hand, work-injury costs have actually increased with additional expenditures for correction of unsafe physical conditions for safety staff, for employee orientation, and for safety records when these expenditures are applied ineffectively. As a result, some organizations in the same industry may have higher injury costs per employee than others. And, of course, organizations that have no safety programmes generally have higher injury costs than similar companies that have implemented such programmes.

3. **Unsafe Employees Acts:** Although organizational factors play important role in occupational safety, some experts like. Thelan et al (1985), point to the employee as the cause of accidents. Accidents depend on the behaviour of the person, the degree of hazard in the work environment, and pure chance. The degree to which the person contributes to the accident is often regarded as an indicator of proneness to accidents. Accidents proneness cannot be considered a stable set of personal trait that always contributes to accidents. Nevertheless, certain psychological and physical characteristics seem to make some people more susceptible to accidents (Kent et al, 1982); (Hull, 1982). For example, employees who are emotionally "low" have more accidents than those who are emotionally "high", while employees who have had fewer accidents have been found to be more optimistic, trusting, and concerned for others than those who have had more accidents. Employees under greater stress are likely to have more accidents than those under less stress (Richlefs, 1982). Those with better vision have fewer accidents than those with poorer vision. Older workers are likely to be hurt less than younger workers. People who are quicker at recognizing visual patterns than at making muscular manipulations are less likely to have accidents than those who are just the opposite. Many psychological conditions probably related to accident proneness, for instance, hostility and emotional immaturity, may be temporary states. Thus, they are difficult to detect until after at least one

accident. Because none of these characteristics is related to accidents in all work environments and because none is always present in employees, selecting and screening job applicants on the basis of accident proneness is difficult. However, even if it were possible, aspects of the organization, such as its size, technology, management attitudes, safety programmes, and quality of supervision, would still be important causes of accidents for those job applicants who are actually hired.

Daniel (1995), report that there are three basic cause of workplace accidents: chance occurrences, unsafe conditions, and unsafe acts on the part of employees.

4. **Chance Occurrences:** Chance occurrences such as walking past a plate glass window just as someone hits a ball through it, contribute to accidents but are more or less beyond management's control.

Unsafe Conditions and Other Work-Related Accident Causing Factors: Unsafe conditions are one main cause of accidents. They include such factors as:

1. Improperly guarded equipment.
2. Defective equipments.
3. Hazardous procedures in, or around machines or equipment.
4. Unsafe storage that is, congestion, overloading.
5. Improper illumination that is, glare, insufficient light.
6. Improper ventilation, that is, insufficient air change, impure air source (David et al 1985).

The basic remedy is to eliminate or minimize the unsafe conditions. According to Daniel (1995), Occupational Safety Health Act (OSHA) standards address the mechanical and physical conditions that cause accidents. Furthermore, a checklist of unsafe conditions can be useful for spotting problems. One such checklist is presented in figure 1.

Philip and Steven (1987) highlight that "while accidents can happen anywhere, there are some high danger zones". About one-third of industrial accidents occur around forklift trucks, wheelbarrows, and other handling and lifting areas. The most serious accidents usually occur near metal and woodworking machines and

saws, or around transmission machinery like gears, pulleys, and flywheels (Workplace Facilities, 1997). Falls on stairs, ladders, walkways, and scaffolds are the third most common cause of industrial accidents. Hand tools, like chisels, and screwdrivers, and electrical equipment, such as extension cords, electric droplights, and so on, are other big causes of accidents (Myron and Frances, 1912; David, 1995).

Other work-related factors contribute to accidents, such as job itself, the work schedule; and the psychological climate of he workplace.

Unsafe Acts: Most safety experts and managers know that it is impossible to eliminate accidents just by reducing unsafe conditions. People cause accidents, and no one has found a surefire way to eliminate unsafe employee acts such as:

1. Throwing materials.
2. Operating or working at unsafe speeds-either too fast or too slow.
3. Making safety devices inoperative by removing, adjusting, or disconnecting them.
4. Using unsafe procedures in loading, placing, mixing, or combing.
5. Distracting, teasing, abusing, startling, quarreling, and horseplay (Myron and Frances, 1992).

David and Adam (1996), assert that unsafe acts such as these can undermine even the best attempts on manager's part to minimize unsafe conditions.

Traits Characterizing Accident – Prone People

Psychologists like Arbous and Kerrich (1953), have tried for many years to determine what package of traits distinguishes those who are accident prone from those who are not. While some believe that most accident – prone people are impulsive, most experts today doubt that accident proneness is universal, that some people will have more accidents no matter what attention they are put in. Instead the consensus is that the person who is accident prone on one job may not be on a different job, that accident proneness is situational. In the words of David (1985) personality traits, such as emotional stability, may distinguish accident prone workers on jobs involving coordination. In fact many human traits have

been found to be related to accident repetition in specific situations such as vision, age, perceptual versus motor skills, vocation interests etc.

How to Prevent Accidents in Human Organizations

Kent et al (1982) believe that in practice, accident prevention boils down to two basic activities (1) Reducing unsafe conditions and (2) Reducing unsafe acts through various means.

Reducing Unsafe Conditions

Reducing unsafe conditions is an employer's first line of defense. Safety engineers should design jobs to remove or reduce physical hazards. In addition, supervisors and managers play a role in reducing unsafe conditions. Sometimes the solution for eliminating an unsafe condition is obvious, and sometimes it is more subtle. For instance, slips and falls at work are often the result of debris or a slippery substance on the floor (Susannah, 1996). Relatively simple remedies for problems like these include slip-reducing floor coatings, floor mats, increased lightbulb wattage, and a system to quickly block off spills. But special safety year can also reduce the problems associated with otherwise unsafe conditions. For example, slip-resistant footwear with gridded or grooved soles can reduce slips and falls.

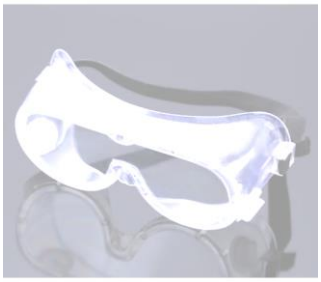
Reducing Unsafe Acts Through Selection and Placement

Reducing unsafe acts is a basic approach, and one way to do this is to screen out those who might be accident prone before they are hired. The basic technique is to identify the human trait, such as visual skill, that might be related to accidents on the specific job in question. Then determine whether sores on this trait are in fact related to accident on the job (Michael, 1998). For example: emotional stability and personality tests, measures of muscular coordination, tests of visual skills, and employee reliability.

Figure 1: New Safety and Health Product to Help You Run Your Business More Effectively.

Dual-Purpose Lenses

Dalloz Safety"s Wilson 1/0 Indoor/ Outdoor lenses N9 designed for people who frequently move from one lifting environment to another. Wilson 1/0 lenses are made of impact resistant optical grade polycadonate, provide 100 percent protection, and meet all US and Canadian safety standards 1/0 lenses available in various Dalloz frame, such as Prevail, Eclipse and Santa Cruz Dalloz Safety, Reading Ps. Circle 250



Disposable Waste

Sharps Disposal by Mail System provides a convenient, environmentally sound disposal service for small generators of medical waste or used bidhazard clean up materials. The system consists of a sharps container, pick-up cones a protective bag liner, pre-paid postage return box and wall monitoring brackets. Available in three container sizes ranging from one to three gallons. Sharp Compliance Inc. Houston Teras. Circle 252



Safe Lifting

The Drum Gripper from T & S Equipment Co. enables the user to safely lift 30 or 55 gallon steel drums with a fork truck. Available as a single or double drum gripper with capacities to 1,570 pounds. Fork products as 21-½ inches high by 7-12 inches wide on 13-12 inch canters,T&S Equipment, Angola Ind. Circle 256



Overboots

Fully waterproof Norcross Safety Products' Servos SF Super-Fit overboots protect hard-to-fit work boots. Their button-and loop closures and extra-large kick-off lugs make them easy to pull on and off, yet they fit comfortably and snugly over boots. Reinforced and toes, a slip-resistant outsole, a reinforced upper, and seamless molded construction offer protection and durability. Low-cut and 12 inch models are offered in sizes six to 15. Norcross Safety Products, Rock Island, III Circle 251



Washable Gloves

Valco Inc. has developed a fully washable line of anti-vibration and materials handling gloves. Several models are available in synthetic leather or neoprene, full-or half-fingered, wrist wrap or standard. All gloves feature sure-grip palms. Valeo Inc. Waukasha, Wis.

Circle 253



Workwear

Carhant's Frame Resistant Workwear is made from 100 percent Nomex IIIA fiber, which becomes thicker when near heat. Garment features include Velca desures and zippers on bibs and overalls, a limited benband on hood and front hand warmer products. All garment meet OSHA and ASTM guidelines for frame resistance Carhant Inc. Dearbom Midi

Circle 256



Vibration Reminder

Innovative Tracking Solutions Corp.'s ==== Practice Vibration Reminder Disk prompts worker throughout the day to take 30-second breaks to perform conditioning exercise at their workstations help reduce the chance of developing repetitive stress injuries. The disk can be kept in a pocket, clipped under clothes or kept inside a special side pouch-parch, Choose reminder intervals of 60, 45.





Respirators

MSA is offering a free, easy-ro-understand selection guide MSA Air-Purifying Respirators. It is divided into two parts by hazard category, by the appropriate family of respirators and by a table of listings by industry. All MSA respirators are certified by MOSH and comply with OSHA's revised respiratory protection standard, 29 CFR Part 1910, 134, MSA, Pitsburgh, Pa. Circle 257

Reducing Unsafe Acts Through Posters and Other Propaganda

Propaganda such as safety posters can help reduce unsafe acts. In a study Laner and Sell (1960) demonstrated that their use apparently increased safe behaviour by more than 20%. However, David (1985), argue that "Posters are no substitute for a comprehensive safety programme; instead , they should be combined with other techniques like screening and training to reduce unsafe conditions and acts". The posters should also be changed often.

Reducing Unsafe Acts Through Training

In the opinion of David (1993) safety training can also help reduce accidents. Such training is especially appropriate for new employers. Manager should instruct them in safe practices and procedures, warn them of potential hazards, and work on developing their predisposition toward safety. Employees can engage in a series of exercises before starting work, including touching their toes, twisting their torsos, swinging their arms, and performing other stretching exercises, to help minimize work-related injuries.

Reducing Unsafe Acts Through Top-Management Commitment

The most consistent research finding is that successful safety programmes require a strong management commitment to safety (Frederick et al, 1993). This commitment manifests itself in top management's being personally involved in safety activities on a routine basis; giving safety matters high priority in meetings and production schedule; giving the organization safety officer high rank and status; and including safety training in new workers' training.

Reducing Unsafe Acts Through Incentive Programmes and Positive Reinforcement.

Research has proved that incentive and positive reinforcement programmes have been successful at reducing workplace injuries. According to Jennifer (1997) UPS has been giving its drivers safety awards since 1998. Gregg (1997), concluded that Clariant Corp. managers and employees are evaluated annually on meeting goals in four key areas including safety performance; their bonuses, up to 80% of gross pay, therefore depend on their safety records. Gregg (1997), further warned that eliminating unsafe conditions is, first, managers' responsibility; incentives, "attack unasafe acts and employee behaviours", but cannot substitute for good job design

and engineering controls. Thus, as posit by Douglas and Catherine (1994) positive reinforcement programmes can improve safety at work.

Reducing Unsafe Acts by Employing Safety

It is the safety – minded supervisor's job to set the tone so that his or her subordinates want to work safely. This involve more than talking-up safety, ensuring that spills are wiped up, or enforcing safety roles (Jorma, 1994). Thus, it is crucial to show by both word and deed that safety is crucial. For example, William (1996), suggest that employer should;

1. Praise employees when they choose safe behaviour; Listen when employees offer suggestions, concerns, or complaints.
2. Be a good example for instance, by following every safety rule and procedure;
3. Continuously improve and simplify plant safety, for instance by removing hazards where possible;
4. Visit plant areas regularly;
5. Maintain open safety communication, for instance by telling employees as much as possible about safety activities such as testing alarms and changing safety equipment or procedures;
6. Link managers' business to safety improvements.

Reduce Unsafe Acts by Establishing a Safety Policy

Organization's safety policy should emphasize that the firm will do everything practical to eliminate or reduce accidents and injuries. It should also emphasize that accident and injury prevention are not just important, but of the utmost importance at the firm.

Reducing Unsafe Acts by Setting Specific Loss Control Goals

Analysis the number of accidents and safety incidents and then set specific safety goals to be achieved. James (1993), argue that safety goals can be set in term of frequency of lost-time injuries per number of full-time employees.

Reducing Unsafe Act by Conducting Safety and Health Inspections.

This means routinely inspecting all premises for possible safety and health problems, using checklists as aids. Marlene (1992); Linda (1994); David (1994)

advised to investigate all accidents and "near misses", and have a system in place for letting employees notify managements about hazardous conditions.

Reducing Unsafe Acts by Monitoring Work Overload

David (1996) study of "role overload" formally defined as the degree to which the employee's performance was seen as being affected, by inadequate time, training, and resources, was significantly associated with unsafe behaviours. Also, Virgina (1998); Smith (1998) suggested that as work overload increase, workers are more likely to adopt more risky work methods. Given this, employers and their supervisors should monitor employees, and particularly those in relatively hazards jobs, for signs of stress and overload.

Conclusions

The area of safety and accident prevention is of concern to managers at least partly because of the staggering number of deaths and accidents occurring at work. There are also legal and economic reasons for safety programmes. Certain organizations and even departments have higher occupational accident rates because of several factors such as organizational qualities, safety programmes, unsafe employees acts and chance occurrences. Other work-related factors include the job itself, the work schedule, and the psychological climate, also contribute to accidents. Unsafe acts on the part of employees as a cause of accidents are to some extent the result of certain behaviour tendencies on the part of employees, and these tendencies are possibly the result of certain personal characteristics. However, most experts doubt that there are accident prone people who have accidents regardless of the job. Instead the consensus seems to be that the person who is accident prone in one job may not be on a different job. For example, vision is related to accident frequency for drivers and machine operators but might not be for other workers, such as accountants. Research also indicate that there are many strategies to prevent accidents. One is to reduce unsafe acts, for example, through selection and placement, training, positive reinforcement, propaganda, and top-management commitment.

Recommendations

The following recommendations are proffered to reduce accidents:

1. Effort should be made to improve occupational health and safety conditions in human work environment.
2. Managers should be concerned with safety and accident preventions in workplace environment.
3. Unsafe conditions, selection and placement, posters and propaganda, training, top management commitment, incentive programmes and reinforcement, emphasizing safety, establishing a safety policy, setting specific loss control goals, conducting safety and health inspections, and monitoring work overload in human work organizations.

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