

Strategies to improve the working conditions in the textile industry

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Abstract:

The article throws light on the occupational health and safety situation in the textile sector. While the textile sector is a significant global employer, it is also connected to many occupational health and safety risks. The article provides an overview of the risks frequently experienced by textile workers, including noise, dust, and chemical exposure, as well as ergonomic and psychosocial problems. The article looks at methods companies can apply to enhance workplace occupational health and safety and the legal and regulatory frameworks in place to safeguard workers.

Key words: Textile industry, Occupational Health and Safety, Work Environment, Health risks.

1 Introduction

Weaved or knitted fabric formed of yarn is the primary definition of the word textile. Nevertheless, textiles are defined as everything created from fibre, yarn, and fabric, including other products. The textile industry is an industry that includes the fields of research, design, development, production, and distribution of textiles, fabrics, and apparel.

Before the industrial revolution, people produced fabrics and garments for their use in their homes. On occasion, they were even sold again in limited quantities. The development of the flying shuttle in 1733, the spinning jenny in 1764, and the power loom in 1784 marked the beginning of the textile industry. Later, mass production of textiles and clothes started. Eli Whitney's cotton gin in 1792, James Watt's improved steam engine in 1775, and Elias Howe's sewing machine in 1846 all significantly contributed to the textile industry's development. Nowadays, every company involved in creating, producing, manufacturing, and distributing textiles is a part of the global textile industry. Currently, the industry is likewise highly complicated. Agriculture begins with the production of fibre, the care of sheep and silkworms, and mineral and metal mining. These fibres are then transformed into yarns, textiles, and clothing. These include clothing, spinning, weaving, knitting, and dyeing mills. Moreover, this sector is associated with businesses that sell laces, looms, knitting materials, buttons, zippers, sewing machines and threads, and curtain hardware [1].

2 Organization of the textile industry

The departments of clothing manufacturing are listed below. These divisions include the pre-production, production, and post-production divisions.

- Marketing and business development department

One needs to build up some auxiliary departments in order to run the factory's production departments efficiently. The following are a few auxiliary departments in a clothing production setup. These divisions include the pre-production, production, and post-production divisions. One needs to build up some auxiliary departments in order to run the factory's production departments efficiently. The following are a few auxiliary departments in a clothing production setup.

What is occupational health and safety?

Occupational health and safety (OHS) is concerned with a person's safety, health, welfare, and well-being while at work. Industries have a legal obligation to ensure that their employees are in a safe working environment. OHS mandates that any health problems employees may encounter while at work or, as a result, must be prevented and treated.

OHS must also ensure that employment opportunities are not unjustly denied to people with disabilities or impairments and that work processes are modified to make it safer for employees to perform their jobs [3].

3 Ohs hazards associated with the textile industry

The occupational safety and health (OSH) situation of workers in the clothing manufacturing sector is progressively becoming more severe and complex [4]. In this industry, the most significant risks typically come from indirect risks that have a long-term impact from repeated duties rather than direct dangerous dangers [5].

OSH hazards are divided into five categories by the International Labor Organization, including physical hazards, ergonomic hazards, psychological hazards, biological hazards, and chemical hazards. Below are the OHS hazards associated with the textile industry.

1. Physical hazards –

Excessive noise
Improper lighting level
Insufficient ventilation
Excessive vibration
Extreme heat
Untidy working environment
Blockage in exit ways (Especially in case of fire)
Absence of health facilities (Pure drinking water, separate washroom facilities)

2. Ergonomic hazards –

The poor ergonomic design of workstations and work conditions (E.g., Uncomfortable seating arrangements)
Badly designed machinery
Repetitive nature of works
Awkward postures
Lifting problems
Prolonged working hours
Inadequate circulation spaces

3. Psychological hazards –

Stress
Strain
Excessive physical workload
Abuse/ Harassment
Fatigue

4. Biological hazards –

Exposure to biological agents (Bacteria, viruses, infectious waste, and infestations)
Poor nutrition

Problem due to taking an imbalanced diet

5. Chemical hazards –

Excessive exposure to cotton dust
Emissions of toxic substances from dye
Inhaling dust from fabrics
Inhaling dust from machines
Exposure to dangerous chemicals (arising from liquids, solids, dust, fumes, vapours and gases)
4 Occupational safety and health standards and regulations related to the textile industry International labor standards
C155 - Occupational Safety and Health Convention, 1981 (No. 155)

R164 - Occupational Safety and Health Recommendation, 1981 (No. 164)
C187 - Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)
R197 - Promotional Framework for Occupational Safety and Health Recommendation, 2006 (No. 197)
C161 - Occupational Health Services Convention, 1985 (No. 161)
R171 - Occupational Health Services Recommendation, 1985 (No. 171) [7]

OSHA standards

There are specific OSHA guidelines for general industry concern textiles. The OSHA textile-related standards and papers are highlighted in this section.

OSHA lists the most popular regulations for particular 2–6-digit NAICS (North American Industrial Classification System) codes.

Standard State Plans

29 state plans that have received OSHA approval are now running state-wide occupational safety and health

initiatives. Standards and enforcement programs for State Plans must be at least as effective as those for

OSHA, while they may have additional or more strict criteria [8].

5 COMMON HEALTH HAZARDS IN THE TEXTILE INDUSTRY

The working staff in the textile industry has serious issues with health and safety. It is a particular sector of the economy where employees' health is impacted by their line of work. Numerous risks and hazards come with these jobs. These risks not only have an impact on the workers' physical health but also on their mental and emotional well-being. Respiratory function significantly deteriorates in the disorders that result from the textile industries.

Workers in the textile industry are exposed to various risks, including physical, chemical, and biological risks and psychosocial risks, such as mental stress and psychological imbalance [9]. According to a study, the number one occupational hazard in the textile sector is lung disease, followed by reproductive system disorders, noise-induced hearing loss, heart and vision problems, neurotoxicity, other dermatological conditions, and mental stress [10].

Respiratory illnesses have always been linked to the textile industry. The primary emphasis of work-related health research in the textile and apparel industries has been byssinosis since the early 1900s [11]. Inhaling organic fibres is as dangerous for human life as inhaling inorganic fibres. When exposed to organic fibres like cotton fibre, the employees should exercise caution and safety [12]. Current research indicates that incidence has significantly increased in developing societies [13]. The use of machines to harvest cotton from the fields is on the rise, and reports indicate that this type of cotton generates more dust and debris in the textile sector than cotton that is picked by hand [14].

The hygienic precautions inside the factory premises can lessen further injury to the experts even if many issues are found to represent a life threat to them, such as the lousy working conditions implemented in the native country, weather considerations, etc.

The professionals working in the textile sector are exposed to a wide range of risks, including physical, chemical, biological, and psychosocial risks like mental stress and psychological imbalance [15]. The main risk factors were identified as the workers' lack of understanding of

their occupational risks and prolonged exposure due to irregular work hours [16]. Certain respiratory illnesses are known to impact dyeing process workers [17].

It was discovered that smokers were noticeably more impacted by the reductions in respiratory function [18]. The use of personal protective equipment in conjunction with the implementation of adequate engineering controls in production technologies is strongly advised by experts to contribute significantly to further lowering occupational diseases [19]. Additionally, it has been discovered that working in the dyeing process strongly correlates with liver disease [20].

Evidence of possible respiratory disorders as a result of exposure to cotton dust

In the course of numerous procedures used in the textile industries, the workers are highly exposed to dust specks from various materials, including sisal, wool, cotton, hemp, flax, and a few other materials [11].

With inhalation, these dust particles pass through our respiratory system and lungs. The final component of the respiratory system, the alveoli, thoroughly filters the dust and transports the oxygen ingested to the bloodstream. The dust particles that become trapped continue to congregate in the alveoli and obstruct further oxygen transport to the blood cells. This problem causes a variety of respiratory conditions in workers. Following is a list of potential illnesses related to earlier investigations.

1. Byssinosis
2. Diffuse lung disease
3. Dry cough
4. Discomfort in breathing and chest constriction
5. Chronic bronchitis

Byssinosis - Byssinosis, also called the brown lung, is a fatal condition that can be brought on by prolonged exposure to cotton dust. Breathing issues, chest tightness, and wheezing are signs of this illness. In the United States of America, OSHA (Occupational Safety and Health Administration) estimated in 1938 that more than 30000 people have byssinosis and that almost 100000 more are at a high risk of contracting the disease [9].

The examination of different forms of technology has made the nature of labour in the textile sector much more pleasant for women, who now make up the majority of workers in this industry. Women are more likely than males to be exposed to organic fibres due to labour allocation along gender lines [11]. Study participants included 656 characters routinely exposed to cotton dust and 113 characters not, according to a Beninese Company of Textiles investigation into respiratory problems among professionals working in the production industry. The analysis shows byssinosis symptoms are present in roughly 44% of exposed and non-exposed characters. Cotton dust exposure was not only noted in the processing zone, but it also had a negative impact on the processing industry [13].

As the males in the blow room and card room were examined, it became clear that byssinosis primarily affects those between the ages of 50 and 60. A total of 190 subjects were evaluated for their respiratory capacities. Of the 190 participants, byssinosis was found to afflict 115 (60.52%).

Byssinosis actually differs greatly from true bronchitis in that it starts off with a dry cough, progresses to a severe stage, and occasionally results in lifelong disability [14]. Fig. 1. represents the chest radiography view of a 56-year-old female adult who has spent seven years working in the textile sector. The presence of cotton dust remnants indicates lung deterioration [19].

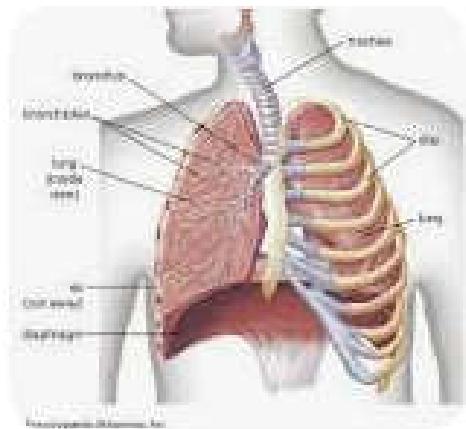


Fig.1. A byssinosis-affected lung [19]

Diffuse lung disease - The interstitial connective tissues between the lung part and the alveoli have deteriorated in this form of the disease. These connective tissues provide stability for the alveoli to retain a correct fit during air inhalation.

According to a case report from a study, a subject who was 66 years old and had been exposed to cotton dust for nearly 50 years had interestingly no symptoms of byssinosis, but after a thorough examination, organic cellulose fibres were discovered in the subject's lungs, and the condition was described as cotton dust pneumoconiosis [12].

Dry cough - Those who were exposed to cotton dust while at work developed a chronic cough. Long-term coughing for three months is considered to be chronic. It is described as a dry cough that solely originates in the throat and not further down. The inhalation of allergic cotton dust irritates the throat. Although chronic cough is not the same as typical asthma, it is a step in the development of asthma. In a study by Ahsan, Ahmed, and Khan to evaluate occupational exposure among textile industry workers, it was conclusively demonstrated that 2.9% of the total subjects in the non-exposed workers and also about 16.8% of the total subjects in the exposed workers both had symptoms of chronic dry cough [15].

About 372 adult males from 15 different textile mills participated in a study by A. A. Nafees functioning lung among the textile industry workers in Karachi and Pakistan, and the findings revealed that about 7.5% of the subjects had a persistent cough. According to this study, a participant has a chronic cough if they suffer it for at least 24 months and 90 consecutive days in a row every year [15].

Discomfort in breathing and chest constriction - The ability to breathe differs significantly between employees exposed to cotton dust and those who are not, and the majority of the respondents reported

having difficulty breathing [17]. Similar results were found in a study by AV Hinson, which involved 656 exposed participants and 113 participants who were not exposed to cotton dust. The study noted that 7.2% of the total participants experienced chest constriction, and 9.9% of the total participants experienced breathing difficulties. It also noted that there was a sizable difference between the exposed and non-exposed workers' performance [9]. According to research by C.H. Laraqui, 16.5% of the 224 exposed people and 80 non-exposed people reported having shortness of breath often [18].

Chronic bronchitis - According to a study by AV Hinson, chronic bronchitis is characterised by a persistent cough accompanied by mucus from the respiratory system for a minimum of three months. They appeared to have observed 3.5% in the exposed while only observing 0.9% in the non-exposed individuals [9]. Similar to Glindmeyer's study, which estimates an average exposure of 196 g/m³ over shift changes in the Yarn Manufacturing Workers endured 9.4% on a total of 827 falling over 40 years of age [21].

Toxic liver disease

Dimethylformamide is frequently used in aramid fibers, which make up a significant portion of military materials. It is considered to have outstanding characteristics. The research demonstrates that various animal species, including mice, cats, rabbits, and rats, are toxic to the N, N-dimethyl amides, also known as Hallcomids. Dimethylformamide is now known to cause toxic liver illnesses and may be a chemical that causes cancer in living things. It also damages women's reproductive systems and causes birth problems [20, 21].

Noise-induced hearing loss

The most frequent preventable cause of deafness is noise-induced hearing loss (NIHL). The intensity, length of exposure, spectrum properties of the noise, and personal susceptibility all affect how much is present

NIHL Industrial Engineering Department
EDP / IT department

- Accounting Department
- Human Resource and Administration
- Shipping and documentation.

All industrial employees, whether in wealthy or developing nations, run the risk of having NIHL. Result of repeated exposure to loud noises, noise-induced hearing loss can be called as a sensorineural hearing deficit that starts at higher frequencies (3,000 to 6,000 Hz) and gradually worsens [22].

Despite the fact that the loss is usually symmetric, noise from sources like sirens or firearms may result in an asymmetric loss. The hearing loss brought on by exposure to workplace and recreational noise causes catastrophic handicap that is almost entirely avoidable [23].

After presbycusis, noise-induced hearing loss is the most prevalent sensorineural hearing deficiency (age-related hearing loss). Every sound affects the stereocilia of the hair cells of the cochlea's basilar membrane; if these forces are too great, they can result in cell death [24]. In emerging nations, the burden of occupational noise is 21%, compared to an average of 16% in Western nations [25]. The prevalence of NIHL in industrial populations ranges from 37% to 59.7% and varies by industry (electrical workers, sand and gravel workers, and construction workers) [26].

PREVENTION AND CONTROL MEASURES

Occupational Health and safety can affect the workers' safety and health. Therefore, careful attention is important to prevent or minimise exposure levels to hazards and take necessary actions to avoid and minimise the health and safety issues that can be caused in the textile industry. Therefore, it is essential to have preventive measures in place to control the health hazards in the textile industry [27].

Risk Assessment

The textile industry is known to present significant hazards and risks to workers, which can arise from the use of different tools, machines, equipment, operations, and substances. A comprehensive risk assessment should be conducted to identify and evaluate potential hazards. Conducting workplace risk analysis and assessment studies is crucial to preventing occupational accidents and diseases, minimising production losses, protecting the company's reputation, and reducing the impact of such incidents. By identifying potential risks and hazards in the workplace, employers can take appropriate measures to control and prevent these risks. This may include implementing safety procedures, providing appropriate personal protective equipment, and investing in ergonomic workstations and machinery.

Risk assessment should be conducted periodically to ensure that any changes to the workplace or work processes are considered. Once hazards and risks have been identified and evaluated, appropriate measures should be developed and implemented to control and prevent them. By taking these steps, employers can provide a safer work environment for their employees while also minimising the potential for accidents and injuries [28].

Implementation of Ergonomic Workstations

Workers in textile industries face multiple risk factors that increase their susceptibility to developing work-related musculoskeletal disorders (WMSD). These risk factors stem from working with constrained postures, poorly designed workstations, and non-ergonomic tools [29]. Reveals that the incidences of pain and discomfort are particularly high in the back, neck, and shoulders, indicating that these regions are most vulnerable to WMSD. Additionally, there are high incidences of wrist pain, which are likely caused by excessive hand work that involves gripping and pinching with the arm in constrained postures. The prevalence of ischial tuberosity pain is also high, which is primarily due to prolonged sitting on hard surfaces.

This data highlights the need for textile industry employers to take proactive measures to reduce the risk of WMSD in workers who operate twisting workstations.

In the textile industry, workers are often required to perform repetitive tasks and handle materials that can be heavy or awkwardly shaped, which can increase the risk of injury and strain on their bodies. To mitigate these risks and promote the health and safety of workers, it's important to design and maintain workstations that are ergonomically appropriate. This can include providing adjustable chairs, footrests, and work surfaces to ensure that workers are able to maintain a comfortable and healthy posture throughout the day. It's also important to limit the weight of materials that workers are required to handle and to provide mechanical assistance where possible to reduce the physical demands of lifting and carrying. Employers can further promote the health and safety of workers by providing appropriate training on safe work practices and ensuring that workers have access to personal protective equipment when necessary. By implementing these measures, employers can create a safer and healthier work environment for their workers.

Chemical Management

Activities of dyeing, printing and finishing in the textile industry involve the use of various chemicals such as benzidine-based compounds, optical brighteners, solvents and fixatives, crease-resistance agents that release formaldehyde, flame retardants that contain organophosphorus and organobromine compounds, as well as antimicrobial agents [30].

The textile industry comprises various chemicals such as Tri butyl tin (TBT) as an anti-bacterial chemical, APEOs (Alkyl Phenol Ethylene Oxide condensates) in softeners, PFCs (Per Fluorinated Compounds) in oil repellent finish, Formaldehyde in wrinkle-free finishing resins, and chlorinated and brominated chemicals in flame retardant formulations and dyeing agents for the process which will readily or indirectly affect the environment to a greater extent [31]. These chemicals play an important role in the manufacturing and processing of textiles, but they can also pose health and environmental risks.

Regularly reviewing and maintaining documentation related to workplace safety regulations is crucial for organisations to ensure the protection of the environment. Management must implement protocols to comply with all rules and regulations concerning environmental and worker safety, as outlined in the organisation's code of conduct, such as corporate social responsibility and environmental responsibility. In the textile industry, it is important for workers to ensure that the production area is separate from the area where food is consumed to prevent the ingestion of harmful chemicals. It is important to implement a comprehensive chemical management system that includes proper labelling, storage, handling, and disposal of hazardous chemicals to prevent exposure to harmful substances and control the associated risks. By implementing a chemical management system, organisations can mitigate risks to worker safety and health, reduce losses in the production process, avoid damage to their reputation, and especially minimise the impact on the environment [32].

Fire Safety

Fire accidents are a significant concern in the textile industry, posing a significant threat to both raw materials and employees. Therefore, prioritising the prevention of such incidents is crucial. To ensure the safety of all workers, it is mandatory to take necessary measures to mitigate the risk of fire accidents. By doing so, the textile industry can not only safeguard its resources and employees but also ensure uninterrupted operations.

Therefore, implementing appropriate fire safety protocols is paramount, and textile manufacturers must take proactive measures to prevent potential fire hazards.

Preventing fires is crucial for the safety and continuity of the textile industry. It is the joint responsibility of the owner, management, government, and employees to take necessary precautions to prevent fires from occurring. Effective personnel management and fire protection technology are essential to prevent potential sources of fires. When storing cotton bales, it is important to maintain proper temperature and humidity levels. To achieve this, warehouses should be equipped with thermometers and kept below 308 K and 70% humidity.

Coal storage must be located away from surrounding areas, and boiler houses should be segregated from adjacent blocks. Electrical installations should comply with standard requirements and undergo frequent maintenance and inspections. Proper housekeeping practices should be observed both inside and outside the industry to prevent the risk of fire. Installing automatic fire alarm systems and automatic sprinkler systems can effectively control the spread of fires and extinguish them before they become more severe. Taking these precautions can reduce the risk of fire and help ensure the safety and continuity of any business [33].

Machine Safety

The textile industry has number of machinery engaged in spinning, weaving, dyeing, printing, finishing and a number of other processes that are required to convert fibre into a finished fabric or garment [30]. Textile machinery poses a significant risk for accidents, especially with regard

to transmission machine parts such as belts, pulleys, gears, shafts, and other revolving parts. Regular maintenance and inspection of machines can prevent workplace accidents. Proper guarding of all power transmitting devices and other nip points and points of operation is essential to ensure the safety of workers. In the textile industry, a high-speed machine can cause repetitive motion trauma, which is a common health hazard and effective guarding and fencing of high-speed equipment can prevent workers from being exposed to these hazards. It is the responsibility of textile manufacturers to ensure the safe operation of machinery and equipment. This includes regular maintenance and inspection, as well as providing appropriate protective equipment and training for workers. Additionally, textile manufacturers must adhere to regulations and guidelines set by government agencies to keep the safe operation of machinery [34].

Health Monitoring

Providing regular health monitoring for employees exposed to hazardous substances or work environments can identify and prevent long-term health risks. Medical examinations should be conducted for the workers from time to time. If significant occupational health problems are observed, appropriate measures should be taken by the management. The presence of trained medical personnel and adequately equipped first aid facilities should be ensured at the workplace. Workers can be rotated within jobs according to a schedule so that they are not faced with continuous noise exposure for a long period of time. There should be proper lighting in the workplace [30].

TRAINING AND EDUCATION

Health and Safety Education and training are vital tools in the textile industry for informing employees, supervisors, and managers about potential workplace risks and safety measures so they may perform more safely and efficiently. The indirect impact of management's health intention on future occupational health and safety effectiveness and management preferences through their managerial roles illustrates the significance of management's health intention for occupational health in the textile industries, with significant managerial effects. A textile Company must take great care to educate workers about their legal, social, and medical rights as well as include elements like training, housekeeping, safety signs, and healthcare centres that promote OHS if it wants to increase worker productivity in addition to quality improvement and cost reduction [35].

Education and training provide better understanding and awareness for employers, supervisors and managers to identify, avoid, report and control workplace hazards. Specific training should be essential for the persons assigned to the specific roles in the OHS system in the company. Delivering efficient instruction and training outside of a traditional classroom is possible. Peer-to-peer training, on-the-job training, and worksite demonstrations can all help promote safe work practices, ensuring that hazards and associated controls are understood and communicating safety principles [36].

Awareness training programs

Managers, supervisors, and employers must acknowledge the organisation of OHS programs, policies, and processes. By being aware, everyone may participate completely in developing, implementing, and upgrading the program. Training those parties on the company's health and

safety policies, goals, and procedures, OHS program functions, and how to report hazards and handle emergencies is crucial. The company should ensure that all the training is provided at the employer's literacy level. Here, it should emphasise that all the company members have a right to make suggestions and report hazards.

Training employers, managers, and supervisors

The safety of employees is the responsibility of employers, managers, and supervisors, who occasionally lack formal training in safety-related ideas and procedures. To overcome this matter in the textile industry, employers, managers, and supervisors should be aware of their responsibilities for workers' safety. Moreover, these three parties must know about reporting injuries, illnesses, and incidents. It is essential to Teach employers, managers, and supervisors about the hierarchy of controls and other basic concepts and procedures for identifying dangers, investigating and regulating them. When an event happens, hazards can be eliminated by actively involving workers in the process and educating them on recognising and controlling hazards.

CASE STUDY OF A TEXTILE INDUSTRY

The Scenario of Environmental & Occupational Health Safety Management Followed in a Textile Industry: A Case Study of Zaber & Zubair Fabrics Ltd. [37]

According to the case study, Zaber & Zubair Fabrics Ltd has established these measures to improve occupational health and safety in their company.

Safety management

Zaber & Zubair Fabrics Ltd. has followed some steps for safety management. They identified hazards and evaluated their risks in the risk assessment step. After that, they adopted and maintained preventive and protective measures to control the identified hazard. In the emergency preparedness step, they have conducted chemical safety programs. And then, they communicated with the employees and trained them to avoid hazards. Finally, they have monitored and reviewed the effectiveness of the safety measures periodically and given attention to the required changes.

MSDS auditing

Zaber& Zubair Fabrics Ltd has provided MSDSs for all the chemicals they use in the workplace to warn and inform the employees. The MSDS includes the description of a chemical, such as properties of the chemical, storage type, uses, potential hazards, precautions for use, safe handling procedures and disposal method of this chemical. By referring to this MSDS, any employer can prevent and manage the hazard.

Electrical safety

If the workers were doing work related to the electrical side, they wore appropriate electrical protective equipment such as nonconductive head protection, eye protection and electrical protective devices. They have implemented some altering techniques such as safety signs, safety symbols and accident prevention tags to warn and protect employees from hazardous electric shock.

House Keeping Condition

They have followed these essential elements to maintain good housekeeping conditions to ensure the OHS in their workplace.

Fire Protection System

Zaber & Zubair Fabrics Ltd has performed fire protection tasks according to their systems. First, as prevention measures, fire extinguishers and fire safety signs were established in the workplace. They also conduct uninformed fire drills more than once a month to check the efficiency of their employees. They have trained one Efficient employer for the firefighting group from each unit. If a fire has happened, the firefighting group will manage it, and the other small team will catch up if any injured persons are on the floors and take them to the hospitals.

Internal Audit for Occupational Health Safety

OHS Committees and Representatives have been appointed to this company following legal requirements. Meetings of the Policy and Health and Safety Committee discussed pertinent subjects to assist in preventing and addressing health and safety issues. Nonetheless, committees at work were convening as frequently as mandated by law. The health and safety committees also participated in several OHS areas mandated by law, such as recording information on workplace injuries, illnesses, and accidents. Proper monitoring procedures, evaluation of the results, and remedial actions all contribute to ensuring that minimal legal criteria are being met. According to audit procedures, monitoring processes were deficient in some critical areas, such as the frequency of committee meetings, the participation rates in training, and the completion of workplace inspections.

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