Original Article
ISSN (Online): 2582-7472

ShodhKosh: Journal of Visual and Performing Arts
May 2024 5(5), 703–707

HEALTH AND SAFETY CHALLENGES IN THE TEXTILE INDUSTRY: A COMPREHENSIVE REVIEW

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DOI
10.29121/shodhkosh.v5.i5.2024.4394

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

The study aimed to analyze the work environment and facilities provided by textile industries concerning health, safety, and other essential human needs. In today's business landscape, corporate social responsibility (CSR) has become a crucial strategy, attracting the attention of researchers, academicians, and corporate leaders. Employees increasingly expect companies to operate ethically and uphold social responsibility in their business practices. This has led to the emergence of the CSR concept, emphasizing that businesses must address social, environmental, and economic responsibilities while ensuring ethical treatment of employees in their operations.[1]

The assessment of workplace conditions in textile and chemical industries was conducted through a combination of qualitative and quantitative measures to evaluate employee satisfaction levels. The study found that workers in these industries are exposed to hazardous chemicals, toxic effluents, and poisonous gas emissions, often without adequate safety equipment. The results revealed that working conditions were generally unsatisfactory, posing significant health and safety risks that hinder productivity. [2,3]

Additionally, many industries lack fundamental workplace facilities, with environmental factors such as temperature, humidity, noise, and lighting frequently failing to meet the National Environmental Quality Standards (NEQS). Inadequate physical conditions further exacerbate workplace hazards, increasing the risk of accidents and occupational illnesses.

Employers and trade unions primarily focus on key concerns such as workplace safety, wages, and job security. The study highlights that maintaining a healthy work environment enhances productivity and employee morale while reducing workplace accidents, premature deaths, and healthcare costs. Implementing effective safety measures and improving working conditions in the textile industry is essential for ensuring worker well-being and long-term sustainability.

Keywords: Health And Safety, Mental & Physical Health, Chemical Gases, Textile Industry, Business Operations

1. INTRODUCTION

It is increasingly recognized that employee mental health plays a crucial role in overall well-being. Workplace stressors and poor mental health can contribute to various physical illnesses, including respiratory diseases, dermatitis, hypertension, diabetes, and cardiovascular conditions. Additionally, deteriorating mental health can lead to employee burnout, significantly impacting both personal and professional life.

An analysis of working conditions in different textile industries across India revealed that inadequate workplace facilities contribute to both physical and mental health issues among workers. In textile and chemical industries, employees are exposed to hazardous chemicals in gaseous, liquid, and solid forms during production processes. These chemicals—classified as toxic, corrosive, explosive, flammable, radioactive, reactive, and carcinogenic—pose significant

health risks due to both acute and chronic exposure. As a result, many employees are forced to leave their jobs due to health complications. Approximately 62% of workers report mental health issues, and an estimated 43% of workplace absences are attributed to some form of mental disorder.[3]

Ensuring occupational health and safety in production units requires active collaboration between employers and employees. A successful workplace safety program must incorporate occupational medicine, industrial hygiene, toxicology, safety engineering, ergonomics, and psychology. To achieve sustainable success, industries must not only meet production demands but also uphold the highest safety standards to protect workers.

This study examines the various hazards associated with the textile industry, including health, safety, and environmental risks. Data on workplace incidents indicate that the highest number of accidents occur in textile industries and toy factories, surpassing those in chemical, food, and electronic production units. The findings highlight the urgent need for improved safety measures and better working conditions to protect employees and enhance workplace productivity.

In this study researcher work on most common health and safety hazards in the Textile Industry but generally enterpurniour not attention seriously as below mentioned.

1.1. PHYSICAL HAZARDS

- Noise Pollution: Many machines in textile Industries create High noise levels from spinning, Dryer and weaving machines can lead to hearing loss.
- Poor Lighting: Inadequate lighting increases the risk of eye strain and workplace accidents.
- Temperature and Ventilation Issues: Extreme heat and poor airflow can lead to dehydration and respiratory problems.

1.1.1. CHEMICAL HAZARDS

- Exposure to Toxic Chemicals: During the working hours Dyes, solvents, and bleaching agents contain harmful substances that can cause respiratory issues and skin diseases.
- Cotton Dust and Fiber Particles: Inhalation of cotton dust may lead to Byssinosis ("brown lung disease"), a common respiratory condition among textile workers.

1.1.2. ERGONOMIC HAZARDS

- Repetitive Motion and Poor Posture: Prolonged standing or repetitive hand movements can cause musculoskeletal disorders.
- Heavy Lifting: Handling large rolls of fabric without proper equipment increases the risk of back injuries.

1.1.3. FIRE AND ELECTRICAL HAZARDS

- Flammable Materials: The presence of cotton, synthetic fibers, and chemicals increases fire risks.
- Faulty Wiring and Overloaded Circuits: Electrical hazards due to poor maintenance can cause shocks or fires.

1.1.4. BIOLOGICAL HAZARDS

Exposure to Bacteria and Mold: Poor hygiene in damp textile processing areas can lead to infections.

1.2. OCCUPATIONAL DISEASES IN THE TEXTILE INDUSTRY: Same Textile Industries Work and Carginouses Gases are Responsible for Same Common Diseases Such Type of Diseases Known by Occupational Diseases as Mentioned Below.

- Byssinosis (lung disease due to cotton dust exposure)

- Contact dermatitis (skin irritation from dyes and chemicals)
- Carpal tunnel syndrome (due to repetitive hand movements)
- Chronic back pain and joint issues (due to poor ergonomics)

2. PREVENTIVE MEASURES AND SAFETY RECOMMENDATIONS: ABOVE MENTIONED DISEASE NOT

2.1. ENGINEERING CONTROLS

- Proper Ventilation Systems: Installing exhaust fans and air filtration to reduce airborne contaminants.
- Noise Control Measures: Using noise barriers and providing workers with hearing protection.
- Fire Safety Equipment: Ensuring fire extinguishers, sprinklers, and emergency exits are in place.

2.2. ADMINISTRATIVE CONTROLS

- Regular Health Check-ups: Conducting routine medical exams to detect occupational diseases early.
- Workplace Safety Training: Educating employees on handling chemicals, fire hazards, and ergonomic best practices.
- Shift Rotation and Rest Breaks: Reducing strain from prolonged working hours.

2.3. PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Respiratory Masks: Preventing inhalation of cotton dust and chemical fumes.
- Gloves and Protective Clothing: Reducing skin contact with hazardous substances.
- Safety Shoes and Eye Protection: Preventing injuries from falling objects and chemical splashes.

3. METHODOLOGY

The data was collected through the observations and personal interview method and analyzed to evaluate the probable level of risk in the textile industry's workplace employee's health and risk. Such as we can calculate also calculate total safe hours. Approximate 48% (Observation Based) of employees injured in the textile industry from small to seriously injure due to lack of safety devices. [4]

Ex: Total Number of employees –X

Work days-7days of the week

One day hours working-7X10(8 AM-6 PM) + One employee working hours=70hour Y (Total works More than 100 Approximate at least in well settled cottage Industries) = 70xY

Z= Extra Working Hours Approximate

In one month approximate 2% employees were injured (Small to big possibility's not sure)

Total Working Hours-by injured (Mentally & Physically) employees approximate 2% =2x12=24%Yearly.

4. HAZARD ASSESSMENT

It was designed to assess and analyze the occupational hazards at the work site to investigate hazards (Health Safety Hazards) in all units of textile mills and chemical industries. Also, the environmental hazards (Relative Humidity and Temperature, noise level, Illumination level, affluent status, and air pollution problems) were assessed. For analysis of the different hazards status by the News section related to different industries Personal Interviews, Visits, and observational checklists were used to evaluate occupational health and safety issues.[5,6]

Analysis of the Temperature, Ventilation, (Humidity) Lighting and Noise Pollution Humidity

Observe and physical presence to find out the temperature, ventilation (humidity) lighting and Noise in the workplace, an average of the different departments of the textile Industries. Shown in Table no -1

Working Section	Humidity Analysis (On average)			Temperature (In Average)		
	Observe	Standard	Remark	Observe	Standard	Remark
Spinning Unit	22-28	40- 60	Down level	45	25	Negative for health
Boiler	35-38	40- 60	Average to low	43	25	
Dyeing Unit	50-53	40- 60	Good to average	50	25	
Pressing Unit	55 -58	40- 60	Good to average	53	25	
Finished Product Unit	42-48	40- 60	Adequate to low	42	25	
Laboratory	45-48	40-60	Adequate to low	43	25	

Noise Area & Illumination Straight: After analysis, it was found that certain sections in textile industries continue generate noise levels higher than the standard, including the laboratory, compressor room, generator room, pressing unit, finished products unit, and boiler area. In contrast, only the packaging and supply collection areas meet standard noise levels.

[6] High noise levels are commonly observed in many textile industry units, especially in developing countries. Prolonged exposure to these high noise levels can damage the eardrum and lead to hearing loss. In addition to hearing impairment, issues such as fatigue, absenteeism, irritation, anxiety, reduced productivity, changes in pulse rate and blood pressure, and sleep disorders have been linked to continuous noise exposure. One of the main contributors to noise pollution in these units is the inadequate maintenance of machinery. Despite the significant health risks, noise exposure is often overlooked by textile units because its effects are not immediately visible, and there is no immediate pain.

A study conducted on 100 employees in textile mills in Jaipur based revealed that 66% of the employees were at risk of developing noise-induced hearing loss. Another study of Indian textile units found that average 20% of the workers studied were suffering from noise-induced hearing loss.

In terms of illumination, two types are generally used in production houses: natural and artificial lighting. Artificial lighting is commonly used indoors, but personal feedback from employees indicates that this can be harmful to physical fitness. Natural sunlight plays a crucial role in bone health and regulating biochemical functions in the body. Clean drinking water, and other basic requirement is also responsible for good health of the employs.[7]

Clean Drinking water, daycare for small kids of the employees, and Workplace meal programs are largely good opportunities to motivate employees to increase effectiveness and production. Work, instead of being accommodating, is frequently a limitation to proper nutrition. Canteens, if they exist, routinely offer an unhealthy and unvaried selection. Workers sometimes have no time to eat, no place to eat, or no money to purchase food. Often, they are given only around 30 minutes to secure a meal.

5. CONCLUSION

It is concluded from the observation and indirect personal interaction, experimental work, and fruitful survey in the working environment that the workers are facing the many problems same problems found and try to discuss. Continue Excess humidity develops headaches and breathing problems due to long exposure also high noise levels in the textile industries are very high mainly in areas of generators, bleaching machines, dyeing machines, drying machines, hydro machines, and knitting machines, The high noise is also from hyperacusis may appear overly sensitive to a range of sounds, finding many noises unbearable and painfully loud, High temperature also creates stress is present in pressing, electricity generating facilities plants, generators, boilers, filling stations, drying, bleaching, and dyeing units. Humidity is present as well which leads to breathing problems.

Chemicals are handled without the use of any personal protective equipment that is a source of the potential hazard, also not organized any types of the awareness program, health checkups, medical facility, pension or other benefits, job security, etc.

Concluded submission for improves work enthuse with positive psychology help in improving the mental and physical health of employees of textile Industries. Basic facilities like Food (Paid or Complementary as industry effort), Tea, and Noise order to reduce by rotating duties provide earplugs, proper ventilation, provide a safety kit for safety with direct exposure to dangerous chemicals. Time of working front of machine or padding table's workers and the tables for seats should be well ranged in height so that there is no back pain, Sitka, musculoskeletal strain, Health insurance as the level of risk factors in the industry.

Ensuring health and safety in the textile industry requires a combination of proper workplace policies, engineering controls, and employee awareness. Employers must actively enforce safety regulations, while workers should follow best practices to minimize occupational hazards. A well-maintained and hazard-free work environment leads to increased productivity, reduced absenteeism, and better overall well-being for textile industry employees.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

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