MAT JOURNALS
Journal of Automation and Automobile Engineering
Volume 3 Issue 3

Industrial Health Hazards in Textile Industry

[1]Deepak Kumar. P, [2]Dr Muthukumar. K
[1]PG Student, [2]Professor
Department of Mechanical Engineering
Bannari Amman Institute of Technology, Sathyamangalam, Tamil Nadu, India
Email: *[1]deepakkumar.is17@bitsathy.ac.in*

Abstract

The way towards making fabric and garments from fiber includes an assortment of procedures, which include, weaving, spinning, dyeing, printing, finishing. There are various health and safety problems are present in textile industry. The health problems are created Noise, dust, Ergonomic and chemicals. The aims of the examination is to examine the extent of the occupational health hazards in working environment coming about to the cost suggestion to the organization by concentrating on ergonomic, physical ,commotion and concoction risks.

Keywords: *Occupational health hazards, Cotton dust, Chemicals, Noise, Ergonomic.*

INTRODUCTION

Manufacturing of textile comprises of a long multistep chain including countless heterogeneous mixes and it additionally one of the best customers of water per kg of created material. Synthetic substances are essentially adds to natural contamination by releasing wastewater wealthy in dangerous synthetic substances, for example, dyes, fire retardants, formaldehyde, dioxins, biocides and substantial metals, which in various ways present dangers to Human health. Safe or perilous synthetic concoctions are leaving the textile factory during various steps of the manufacturing procedure [1].

The textile industry of different units involved with dyeing, weaving, printing, spinning, finishing and a number of other processes that are required to change over fiber into a completed texture or garment.

The major health and safety problems are, Exposure to chemical, Exposure to cotton dust, Exposure to noise, Exposure to UV rays, Biological hazard, Psychosocial hazard and Ergonomic issues.

Exposure to chemicals

Specialists in the textile industry are additionally presented to various synthetic substances, particularly those occupied with the exercises of coloring, printing and wrapping up. Over the long haul, introduction to formaldehyde could prompt respiratory trouble and dermatitis. Inhalation and skin contact of chemicals are can create serious health problems [2].

Additionally, a high level of colorectal disease, thyroid tumor, testicular growth and nasal malignancy was seen among material specialists. Also presence of non-Hodgkin's lymphoma.
Hazardous substances include:

- Substances used directly in work activities (e.g. adhesives, solvents, cleaning agents)
- Substances generated during work activities (e.g. fumes from welding)
- Normally happening substances (e.g. dust)
- Biological agents such as bacteria and other micro-organisms

Cases of the impacts of dangerous substances incorporate:

Skin irritation or dermatitis as a result of skin contact:

- Asthma because of building up a hypersensitivity to substances utilized at work.
- Losing consciousness as a result of being overcome by toxic fumes.
- Disease, which may seem long after the presentation to the concoction that caused it.
- Disease from bacteria and other micro-organisms (biological agents).

Exposure to cotton dust

The laborers occupied with the preparing and spinning of cotton are exposed to significant amounts of cotton dust. They are also exposed to particles of pesticides and soil. Exposure to cotton dust and different particles leads to respiratory disarranges among the textile workers. The lethal illness of byssinosis, normally known as darker lung, is caused among people working in the textile industry by virtue of excessive exposure to cotton dust [3].

In the year 1938 in USA, it was evaluated that 35000 individuals had just been influenced by the disease, while 100000 other people were at risk of contracting it. Hence the Occupational Safety and Health Administration i.e. OSHA made it mandatory for businesses in the textile industry to shield their pros from over presentation to cotton residue and its malicious impacts.

OSHA For 8-hour work the Cotton dust has been settled at 200 micrograms of cotton per cubic meter of air in case of yarn manufacturing, 500 micrograms instance of material waste houses, 750 micrograms if there should be an occurrence of weaving activities, and 1000 micrograms in case of for waste recycling [4]. Employers are required to quantify the amount of reparable cotton dust once in a half year or whenever there is any change that might lead to a change in the level of dust. On the off chance that the level of residue in the air is higher than that according to OSHA rules, the administration should take measures to reduce the same. According to these rules, the employer is required to illuminate the representatives in writing of the residue level present in the atmosphere as well as the steps that the management is planning to take for its reduction. In the event that the dust level can't be lessened, it is the obligation of the administration to give respirators to the employees [5].

The OSHA Cotton Dust Standard was changed in the year 2000, which exempted a framework for washing cotton from the run the show.

Exposure to noise

Abnormal amounts of commotion have been seen in the vast majority of the units occupied with the material business, especially those in creating nations. Spinning and weaving industry are creating high noise level, Long duration working high noise level lead to hearing loss. Different issues like weariness, non-appearance, inconvenience, tension, diminishment in effectiveness, changes in beat rate and circulatory strain and additionally rest issue have likewise been noted by virtue of continuously creating noise. Absence of effective upkeep of hardware is lead to noise pollution. Despite the fact that it causes health effects, presentation to clamor is regularly disregarded by material units since its possessions are not instantly evident and there is a nonattendance of torment.

Ergonomic issues

Ergonomic problems are seen in a larger part of the units occupied with material related exercises in India. Mostly ergonomic problems are created unhealthy and unsafe of worker. Laborers in these units confront various issues, for example, unacceptable furniture, inappropriate

ventilation and lighting, and absence of effective wellbeing measures if there should arise an occurrence of crises. The risks are developing workers for various occupational diseases.

Musculoskeletal disorders like carpal tunnel syndrome, lower arm tendinitis, back pain, shoulder pain, neck pain, and osteoarthritis of the knees are a portion of the word related sicknesses that have been seen among the specialists by virtue of poor ergonomic design.

The worker is working uncomfortable position in whole day. Illumination level is very low and improper positions to fix the light it create the eye strain. By virtue of the persistent utilization of irons in a few units, the moistness level is high, adding to the laborers distress.

METHODOLOGY

Risk assessment is carry out step by step. I used to discover the risk level and zone

1. Identifying risk and its level
2. Evaluating and organizing risk
3. Deciding on preventive measure
4. Taking action
5. Monitoring and inspecting

Checklist

Checklist is simple tool for used risk assessment and it used to identify hazard and monitoring the status of control measure. It used to directly go to the area and visually inspect and fill the check list.

Hazard in textile industry

Table: 1. *Examples of Hazards and their effects.*

Workplace Hazard	Example of Hazard	Example of Harm caused
Cutting tools	Knife	Cut injury
Substance	Benzene	Leukemia
Source of energy	Electric shock	Electrocution
Fabric	Cotton dust	Byssinosis
Printing	Chemical	Skin disease

Hazard discussion

Though cotton dust has been established as the causative agent for respiratory problems, it is important to determine the other risk factors associated with the occurrence of the disease so as to implement comprehensive preventive measures.

Musculoskeletal disorder (MSDs) are the most widely recognized business related medical issue in India with very nearly one out of four laborers detailing spinal pain and one out of five grumbling of strong torments. Manual dealing with, the lifting, holding, putting down, pushing, pulling, conveying or development of a heap, is the biggest reason for damage in the materials part. Manual taking care of can cause either combined scatters from the steady weakening of the musculoskeletal framework, for example, intense injury, for example, cuts or breaks due to accidents.

In work place, risk factors for MSDs are include:

- Working in awkward postures, for example during cutting, product control, spinning, and packaging.
- Repetitive movements, such as during cutting, product control, spinning, and packaging.
- Fatigue from manual handling, during the inspection, storage, treatment, finishing, shipping, and cutting of textiles.

Laborers might be presented to vibrations and noise, for instance amid weaving, sewing, spinning, twisting and cutting.

Introduction to boisterous commotion can result in permanent hearing damage, for example, noise-induced hearing loss and tinnitus. Introduction to vibration, especially together with chance elements for MSDs, can prompt long-term harm. Electromagnetic fields may likewise be found in a few work environments in the textiles sector.

Remedial measure

Isolation of the machine, silencer must be kept, proper maintenance will provide and noise level exceed 85db use Ear plug and Ear muff. Control the noise level 85dB and allow 90dB up to 8hours work. Suitable engineering control and administrative control shall be taken to ensure, so far as is reasonably practicable, that no worker to exposed to sound level exceeding the maximum permissible noise exposure level specified in following table

Table: 2. *Remedial measure*

Time of Exposure limit per day in hours	Sound level in dB
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
¾	107
½	110
¼	115

Measure the cotton dust level and it not more than 200mg/m3 if exceed reduce and control the dust level. Provide the Dust collector and maintain proper housekeeping properly and necessary PPE should wear by worker.

Give the importance to ergonomic and provide proper working procedure it reduce the uncomfortable work station and repetitive strain injuries. Give the periodical medical checkup for all workers. Avoid improper grounding and loose connections. All circuit breaker must be individual and enclosed and used wire as per IS standard.

The seats of the workers and the tables should be well aligned in height so that there is no musculoskeletal strain. There should be proper lighting at the place of work so that eye strain can be avoided. Machinery should be well maintained in order to reduce the level of noise. If necessary, certain parts of machines can be replaced. In the event that the noise level can't be controlled, workers should be provided with earplugs so presentation to clamor can be lessened. Workers can be rotated within jobs so that they are not faced with continuous noise exposure to long duration. There should be proper ventilation at the place of work. Use proper PPE for correct place for example Ear plug, Nose mask, Safety shoes, Goggle for specific jobs, Hand gloves and etc.

CONCLUSION

Health and safety measures play vital role in all industry. It is the basic thing that the specialists know about the different type of occupational health problem in the workplace. In the meantime, it is essential that the management find the solution to protect the labor from critical situation.

The following recommendations are improve the health and safety conditions in textile unit:

In order to minimize the exposure to cotton dust, workers are advised to wear masks. Appropriate dust control equipment should be set up to reduce the workers exposure to dust. In units where there is heavy exposure to hazardous chemicals, workers are advised to wear safety gloves. Medical examination to be conducted once in six month by the employers for the workers. If significant occupational health issues are observed, appropriate action should be taken by the management.

REFERENCES

1. Correia, V.M., T. Stephenson, and S.J. Judd, Characterization of textile wastewaters - a review. Environmental Technology, 1994.15(10): p. 917-929.
2. Health and Safety in the Textile Dyeing Industry (Text book) Samiya Ahmed, Kelvin Tapley.
3. International Labour standards.C155-Occupational safety and health recommendation, 1981
4. B. M. Sangeetha M.E, Ph.D., cotton dust level in textile industries and its impact on human International Journal of Scientific and Research Publications, Volume 3, Issue 4, April 2013 1 ISSN 2250-3153
5. www.osha.gov
6. Mihsin and Weiguo-Impact of occupational health and safety hazard on worker performance in textile industry. (10.21767/2574-2825-c2-006)
7. Industrial health management and safety in the textile industry
8. Takebira UM - Social compliance, occupational health and environment safety management (ISSN: 2165-8064)