



Remedial Measures of Health and Safety in Ginning Industry of Pakistan

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Abstract: The main objective of this research is to study the problems faced by ginning industry of Pakistan as for as the health and safety are concerned, it is necessary to design such a system that can improve the health and safety of workers. Through this research work the health and safety problems related to workers are improved. Health and safety of workers is the key to the quality and production of a ginning industry. Because when the workers are safe and healthy, environmental hazards are minimum, the working environment becomes conducive to work. It has been revealed from field visits and literature review that there are number of problems in ginning industry relating to health and safety of workers. In accordance with this study, general safety precautions to workers and also dust control device cyclone on the machines are proposed in order to reduce diseases like cough, asthma, phlegm and Byssinosis etc. With the help of this research work all misshapes has been minimized.

Keywords:- Ginning, Health and safety measures, Dust diseases, Health and safety acts.

1. **INTRODUCTION**

There are almost more than 1200 ginning units in Pakistan (Pakistan Cotton Ginner's Associations web site). Most of the ginning factories are installed with gin saw machines except few who use roller gin machines. All the saw ginning machines are locally made (Ch. Masood, Majeed 2005), The ginning industry of Pakistan takes no interest on health and safety of labor. These ginning machines tend to have great chances of misshapes and afflictions due to cotton dust as there is no system of dust collection. No doubt, cotton is one of the main cash crops of Pakistan. Thousands of workers are exposed to cotton dust while busy in ginning process (Khan, 2006) These workers especially are exposed to cotton dust, quite freely and frequently, which is a major threat to their pulmonary health. Cotton textile workers are susceptible to various morbid conditions by virtue of workplace and working conditions. These morbid conditions may range from anemia because of nutritional deficiency to chronic respiratory diseases due to cotton dust inhalation (like bronchial asthma, Byssinosis, chronic obstructive lung diseases etc) and varicose veins, low backache due to working postures. High prevalence of dental problems, skin problems, worm infestations are due to substandard personal hygiene (Larson, 2013), Recent industrialization and globalization has changed the occupational morbidity drastically, the new pathologies like cancers, stress, AIDS, geriatrics, psychological disorders and heart diseases are on raise. With this new transition pose

challenges to health care system with new concepts of environmental legislation, ethical issues, new safety regulation, insurance and high cost of health care (Kulkarni, 2012),

To get competitive results and profit in any ginning factory the labor working there should be safe and healthy. The working environment must be safe from every kind of hazards. The green production and health and safety of workers are the main concerns nowadays in ginning industry of Pakistan. This research paper narrates detailed description of the health and safety problems in ginning industry and their solutions.

2. **MATERIALS AND METHODS**

There are five different ginning factories were selected randomly from different areas of Sindh, Pakistan. Memon Cotton Factory, Matiyari ,Jhooley lal Ginning Factory, RD 186, Saleh Pat,Star Cotton factory, Ranipur,SDS Cotton Ginning and Oil Mills, Arore Road Rohri and Jhooley Lal-II Cotton Factory Arore Road Rohri. The whole research was calculated on the basis of survey of these ginning factories, and meetings with nearby medical Doctors. The questionnaire was also made in order to take survey regarding actual data collection i.e. for labor working on the machines, for the management; and for the medical Doctors.

Each questionnaire included different types of questions which were prepared dynamically,

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represented the existing problems in a ginning industry. Then the entire questionnaire circulated in the selected ginning factories among the workers and management to get the positive feedback. As

QUESTIONNAIRES

- a) For Workers of the ginning factories
- 1) How much time do you serve in factory daily?
8-10 hours.
 - 2) Are you comfortable in this work environment? No.
 - 3) Here is much dust, isn't this irritating you? Yes.
 - 4) Which problems do you face while working?
Cough flu and irritation in trachea.
 - 5) Do you know health and safety precautions? No.
 - 6) Does the management of the factory provide you safety kits? No.
 - 7) What type of accidents generally occurs?
Catching of fingers, clothes in pulleys & rollers.
 - 8) Have you ever faced accidents?
Yes, like as suffocation, allergy and cough etc.
 - 9) Dust adversely affects your health, and can cause many problems, do you know these facts? Yes.
 - 10) What is the reason behind you don't use safety uniforms?
We don't know about safety uniforms.
 - 11) Do you ever become sick while working regularly?
Yes.
 - 12) Do you smoke?
Some are smoking.
 - 13) How becomes your condition, while leaving the ginning factory after working a shift?
We feel problem in inhalation and in exhalation.
 - 14) Does the factory management facilitate for your health and safety to have visited a doctor for regular check up of workers? No.
- b) For Management of the ginning factory
- 1) Which safety precautions do you use?
We use maintenance and lubrication.
 - 2) Do you provide safety kits to the workers? No.
 - 3) What technology do you use?
Traditionally which is used in Pakistan.
 - 4) Why don't you use latest technology?
Because it is not yet introduced in Pakistan.
 - 5) How much time a worker serves in the factory daily?
8 hours.
 - 6) Did you ever conducted health and safety awareness lectures and seminars for the workers? Very rare.
 - 7) Do you have employed Safety Engineer in the factory? No.
 - 8) Is there safety guards used on the machines? Yes.
 - 9) Have ever any accident took place here in this factory? No.
 - 10) There are no safety guards and dust collectors installed on the machines, what is the reason?

Because we can't bear the expenses of these devices.

For the Doctors in the vicinity

- 1) What are the diseases, which are caused by cotton dust?
Cough, Phlegm and Byssinosis etc.
- 2) On average basis how many workers of the nearby ginning factory come to you for treatment in a month?
5-10 workers.
- 3) What are the general medical cases to the workers?
Chest tightness, cough and respiration problems etc.
- 4) What are the symptoms of Byssinosis?
Severe cough and difficulty in respiration.
- 5) What are the possible treatments for the diseases caused by cotton dust?
Contemporary medicines.

The Doctor's questionnaire was consisting of the questions about common diseases that mostly occurred in inhabitants of vicinity and labor working in these industries. The information regarding the treatment of those diseases was get and also incorporated it in this research work.

3. RESULTS AND DISCUSSION

In the overall ginning industry of Pakistan no safety precautions and health care system is adopted (Report on Labor Conditions (1946). In the answer of questions from medical Doctors, they replied that there are many pulmonary and respiratory diseases occur in the area, especially where the village or town is near to the ginning factory (Jamro, 2013), Cotton dust is the complex mixture of micro cotton fibers, soil particles, residues of pesticides, micro seed particles and leaves etc. This is hazardous to the human health.

In today's age in every country the work on green production is continue and much capital is invested for eco-friendly production. Beside working labor the second most exposed victim of cotton dust is the Environment. Being very low in weight cotton dust is easily transported from ginnery to the outer environment by air.

Beside human being the plants and trees are also exposed to cotton dust. Specially those plants and trees which are very near or inside the industrial area. As plants make their food from their leaves by Photosynthesis. This dust disturbs their photosynthesis phenomenon, that is the reason plants and trees in the factory area and nearby do not grow as they in clean environment.

The nuisance dust spreads different diseases like as Byssinosis, Cough and Phlegm etc, among the workers. In order to reduce dust problem the backward

incline fan and also cyclones are proposed as shown in Fig. 1 and Fig. 2 respectively.

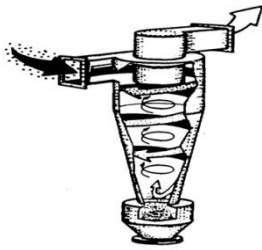


Fig1: Backward incline fan with pipeline and cyclone

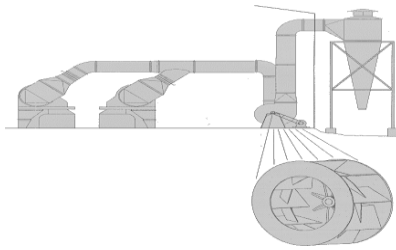


Fig. 2: Air flow in a cyclone

Through this research it has been observed that 25% workers have Byssinosis, 45% have cough, 20% have phlegm and 10% have allergy diseases. All the diseases were cured with the contemporary medicines suggested by vicinity medical Doctors. The figure 3 shows the whole diseases ratio.

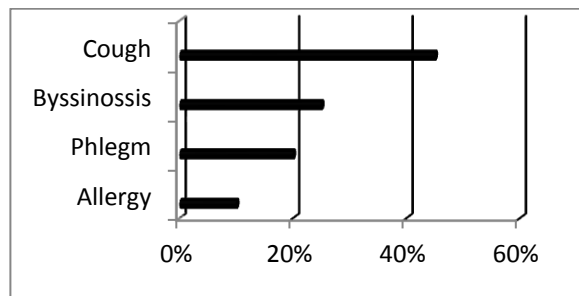


Fig: 3 Diseases Ratio

On the other hand, the general safety aspects were investigated such as machine guarding, fire in the gin.gin housekeeping, compressed air precautions, personal protective equipments, dress for safety, safety in the suction shed, lint cleaner safety, press operation safety, saw gin stands safety, electrical safety, fire extinguishers, bale handling system and noise minimization.

4. CONCLUSIONS

Textile is the major industry of Pakistan. Among all the textile sectors ginning is the weakest chain in the textile industry of Pakistan. This is because we have failed to keep ginning technology up to date in contrast to other countries like Turkey, Egypt, China and Australia etc. This research revealed that cotton dust from machines during ginning process directly affect the workers, that causes lung diseases like Byssinosis, asthma and phlegm to workers. The moving parts just like belts and pulleys etc of the machines are not properly covered. Due to these uncovered moving parts of the machines misshapes occur to the labor.

For keeping good health and safety conditions in ginning industry this research is more emphasizing on two main aspects either upgrade the existing ginning technology or apply PAK-EPA act. It is an act to provide for the protection, conservation, rehabilitation and improvement of environment, for the prevention and control of pollution, and promotion of sustainable development. In order to reduce dust emission from ginning machinery it is proposed to cover up the moving parts of machines, the proper maintenance and correct alignment of the gin machinery. Also OSHA standards can be used in ginning industry of Pakistan in order to improve the health and safety aspects of the labor.

REFERENCES:

- Ch. M. Majeed (2005), Pakistan Cotton Ginner's Associations web site. Executive Director, Bismillah Cotton Ginning Industries Bahawalpur. 245-258.
- Jamro K. (2013), Remedial measures of health and safety in ginning industry of Pakistan, BE Thesis.
- Khan S. A. (2006), Department of Physiology, Foundation University Medical College Rawalpindi Pakistan and Department of Paediatrics, Military Hospital Rawalpindi.
- Kulkarni S. K. (2012), Department of Preventive and Social Medicine DR. S.C.G.M.C. Nanded, Maharashtra, India.
- Larson, R. K. (2013), Department of Medicine, Valley Medical Center, University of California, San Francisco. 432-456.