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**INDIAN JUTE INDUSTRY-ENVIRONMENTAL ISSUE****Satya Narayan Bag****Principal, Gobindapur Sephali Memorial Polytechnic, Guskara, Burdwan, West Bengal, INDIA**

**Abstract:** *Weaving, Broadloom, Spinning and Stitching department of the Jute Industry are exhibited higher than 90 dB(A) Noise level . These department also accident prone areas. So, higher Noise level gives irritation, less attention at work place, which causes higher work place accidents, injuries. Significant difference of illumination at night time 'Lux' data, which are much less than standard norms. Day time value of illumination of various department are maintaining standard. Higher illumination at work place of various department are required to improve for better productivity and control of injury at work place.*

**Key Words :** Workplace, Injury, illumination, Noise, weaving, Spinning

**INTRODUCTION :**

Jute, a major agro produce of the country has over the years helped to develop a giant agro industry which is one of the oldest sectors in India's agricultural and industrial economy with a significant base in Eastern and North Eastern states of the country. The Indian Jute Industry presently is no longer dependent on Sacks only but has proliferated in making of diverse utility, home décor. Lifestyle and engineering products. Indian Jute Sector is now number one Jute goods production and second in exports of Jute in the world.. Major exportable items of Jute goods are Hessian, Yarn, CBC in the traditional Sector while floor coverings and Hand & Shopping Bags are in the areas of diversified Jute Products. Recently food grade Jute Cloths and Bags (FGJP) and Jute Geo-Textiles (Soil Savers) have emerged as the other potential exportable Jute items. Food grade Jute Products have been made compulsory by the International cocoa organization (ICCO) for exporting cocoa beans and also recommended by international coffee organization for exporting coffee beans. Jute geo-textiles have tremendous applications in solving different geo-technical problems. Under this circumstance, Environmental , Safety issues of jute industry are highly essential for Effective Human Resource Management at work place. Present manuscript helps to identify workplace environmental and safety status of Indian Jute Industry and corrective measures required to safe workplace environment.

**RESEARCH METHODOLOGY** :-A few measurement has been performed at various department of Jute Industry in Howrah district of West Bengal, India. The name of the unit is Bally Jute Company Limited. Different Environment performance issues at workplace are measured and analyzed in this manuscripts. The Data Collected are primary in nature. Four months study was taken related to industry major injury at various department. After Collecting the data, analysis has been done to attain a suitable corrective measures plan.

**STUDY AREA** :-BALLY JUTE COMPANY LIMITED is a pioneer jute industry in West Bengal as well as India. The unit is under Kankaria group. The unit is situated at Bally of Howrah District of West Bengal. It is very close to the 'Bally Station'. More than 3000 employees are working here per day. The unit is ISO - 9001 : 2008, ISO - 14001 and OHSAS 18001 : 2007 certified unit. The unit produces A.Twill, B.Twill, Different Jute Bags, Jute Cloth, Yarn, Jute Twine, Carpet Backing Cloth, Bags for Hydrocarbon free Bags.

**LITERATURE REVIEW :**

Jan zera.<sup>1</sup> (2001 ) disclosed in his research findings that impulse noise generated by industrial machines and occurring at a workplace is a cause of substantial hearing loss in workers. The paper presents data on workplace impulse noise, recorded in three plants of the machine industry. The data were collected in drop-forge, punch-press and machinery shops. The results of the measurements are shown as cumulative relative frequency distributions of the C-weighted peak sound pressure level, LCpeak, the A-weighted maximum RMS sound pressure level (SPL), LAmax, and the A-weighted sound exposure level, LEA of isolated acoustic impulse noises. The survey shows that in the drop-forge shop over 90% of acoustic impulses generated by hammer strikes exceed permissible levels of LCpeak = 135 dB and LAmax = 115 dB. In the stamp-press shop, only 10–20% of impulses generated during the technological process exceed maximum permissible levels.

Mallick M M<sup>2</sup> et al, (December 1988 ) concluded in research findings that the problem of noise in jute industry is one that has become increasingly more important as it has a direct bearing on comfort. The emission of noise during jute processing is a notorious characteristics of the industry. In this paper, two aspects of the subject are relevant: (I) to measure the noise level in different sections of the jute industry and (II) to find out the possible way to reduce the problem of noise pollution. Noise level of different sections of jute industry was measured. The maximum and minimum noise level recorded were 107 dBA and 82 dBA. However, 85 dBA is the accepted tolerable sound level for jute and Textile industries. It was found from the recorded data that the noise level is maximum (107 dBA) in weaving section and minimum (82 dBA) in Softener section. Efforts were made to reduce such high level sound by using sound absorbing materials. Jute felts from Jute caddies were found more suitable and cheapest sound absorbing materials. It reduces sound level ranging 6 to 9 dBA. Workers engaged in weaving, spinning, drawing and winding section where the sound level is considerably high should use sound ear protector to avoid such level noise. Another way of reduction of sound level in alternation of metallic gearing system by special type of hard nylon gear.

W Taylor<sup>3</sup> ( 1967 ), et al , concluded in their research paper that the noise levels in Dundee weaving sheds, as in other mills in which traditional looms are in operation, constitute an appreciable hazard to hearing when weavers are exposed over a period of from ten to fifteen years to noise levels in the range 99–101 dB. This paper describes an attempt to reduce loom noise by the substitution of plastics materials for metallic bearing and impact surfaces. The noise reduction achieved in a test loom by substituting plastics components was found to be of the order of only 2–3 dB, limited to the range 0.5–2.0 kc/s. Although small reductions of this order are desirable and worth while, loom-noise levels at present are far above the Damage Risk Criteria for human hearing, and efforts on the part of loom manufacturers to reduce over-all noise levels will require to be made, especially in new machinery.

Kell R L<sup>4</sup> (1971) concluded in his research paper that Audiometric results are presented for a study of hearing impairment in female jute weavers and controls. They are shown to agree well with an earlier independent measurement of jute weavers by TAYLOR *et al.* (1965) and the predictions of PASSCHIER-VERMEER (1971), but to exceed the predicted hearing levels of BURNS and ROBINSON (1970) which forms the basis for the Hygiene Standard for Wide-band Noise of the BRITISH OCCUPATIONAL HYGIENE SOCIETY (1971).

Chandrasekar K<sup>5</sup> (January 2011 ) concluded in his research paper that the workplace environment impacts employee morale, productivity and engagement - both positively and negatively. The work place environment in a majority of industry is unsafe and unhealthy. These includes poorly designed

workstations, unsuitable furniture, lack of ventilation, inappropriate lighting, excessive noise, insufficient safety measures in fire emergencies and lack of personal protective equipment. People working in such environment are prone to occupational disease and it impacts on employee's performance. Thus productivity is decreased due to the workplace environment. It is the quality of the employee's workplace environment that most impacts on their level of motivation and subsequent performance. How well they engage with the organization, especially with their immediate environment, influences to a great extent their error rate, level of innovation and collaboration with other employees, absenteeism and ultimately, how long they stay in the job. Creating a work environment in which employees are productive is essential to increased profits for your organization, corporation or small business. The relationship between work, the workplace and the tools of work, workplace becomes an integral part of work itself. The management that dictate how, exactly, to maximize employee productivity center around two major areas of focus: personal motivation and the infrastructure of the work environment.

## RESULTS AND DISCUSSIONS

**Table - 01 : Noise Level Monitoring at various Department of the Mill**

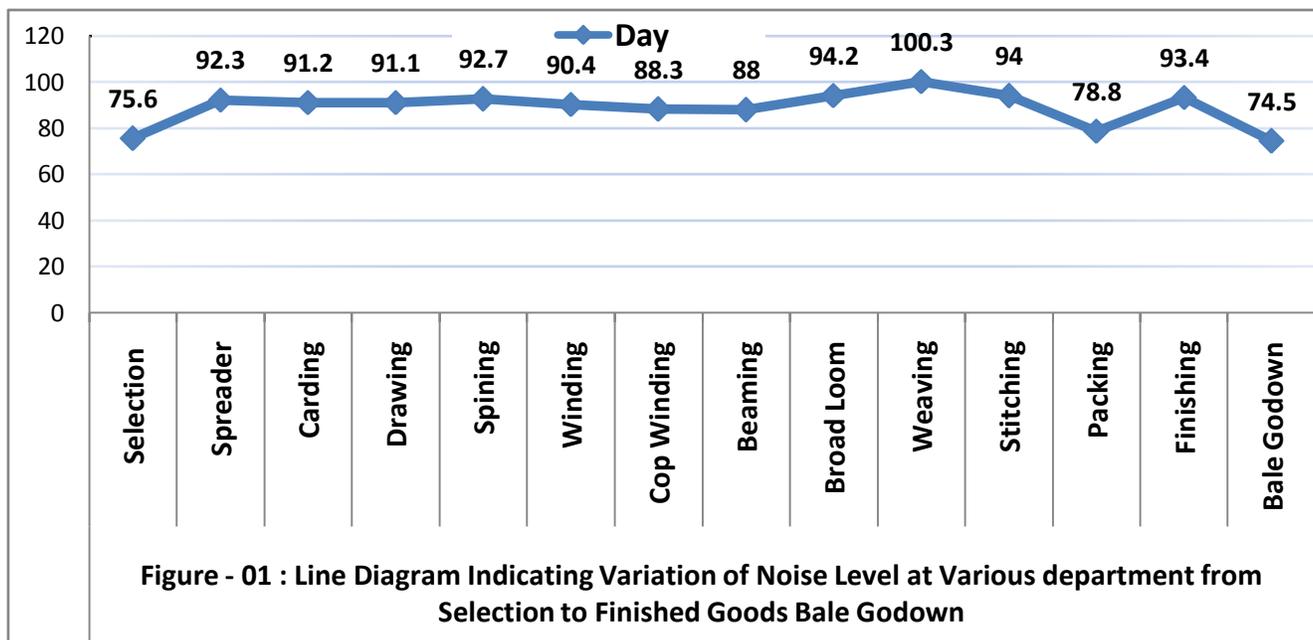
Location	Time	Reading in db (Range)	Temperature	Time	Reading in db (Range)	Temperature
Selection	Day Time	74.4 - 75.6	32°C	Night Time	69.8 - 72.6	30°C
Spreader	"	90.3 - 92.3	31°C	"	88.0 - 89.1	30°C
Carding	"	90.8 - 91.2	31°C	"	90.8 - 91.7	30°C
Drawing	"	90.2 - 91.1	31°C	"	90.3 - 91.0	30.5°C
Spinning	"	92.1 - 92.7	32°C	"	92.9 - 93.5	32°C
Winding	"	89.0 - 90.4	32.5°C	"	85.5 - 91.3	32.5°C
Cop Winding	"	87.0 - 88.3	32°C	"	86.9 - 88.0	32°C
Beaming	"	83.2 - 88.0	32.5°C	"	88.2 - 89.0	32.5°C
Broad Loom	"	92.1 - 94.2	32.5°C	"	93.2 - 95.8	32.5°C
Weaving	"	99.2 - 100.3	33.5°C	"	87.4 - 89.0	32.5°C
Stitching	"	92.5 - 94.0	32°C	"	90.0 - 92.9	30°C
Packing	"	77.9 - 78.8	32°C	"	-	30.5°C
Finishing	"	92.9 - 93.4	32°C	"	94.6 - 95.5	31°C
Bale Godown	"	70.4 - 74.5	31.5°C	"	77.9 - 83.7	30°C

**Source :- Data obtained during measurement at various department of BJCL**

Table 01 explained that dB(A) value of Noise at Night time is slightly less than day time. Carding, Spinning, Winding, Beaming, Broadloom, Finishing, Bale Godown exhibited higher dB(A)

range at night time than day time. These are due to some machines on such department under maintenance operation at day time. Packing at night time remained stop. As a result there are no data recorded .Figure 01 explained the variation of Noise level dB(A) of various department, starting from selection (Production Starting area) to Finished goods godown at day time .Figure 01 exhibited that higher Noise level (DB ) is observed in Weaving department, where 100.3 dB (A) Noise level are recorded. This is due to various orthodox shuttle looms are operating in such department. Lot of motions are operating in each cycle of rotation picking of this shuttle loom, which creates high Noise level. Next to Weaving , Broadloom, Stitching and Spinning are occupied in 2<sup>nd</sup> , 3<sup>rd</sup> and 4<sup>th</sup> position in Noise generating departing of Jute industry .In Broadloom, Big shuttle picking , housing, shedding , Beat Up motions are generating high Noise generating point of such department .In Spinning , a large number of two leg flyer are rotating at 4200 rpm which creates high noise generation. Motions and Power transmission through various gearing creates high Noise level to spinning section .

**Figure - 01: Line Diagram Indicating Variation of Noise Level at Various department from Selection to Finished Goods Bale Godown**



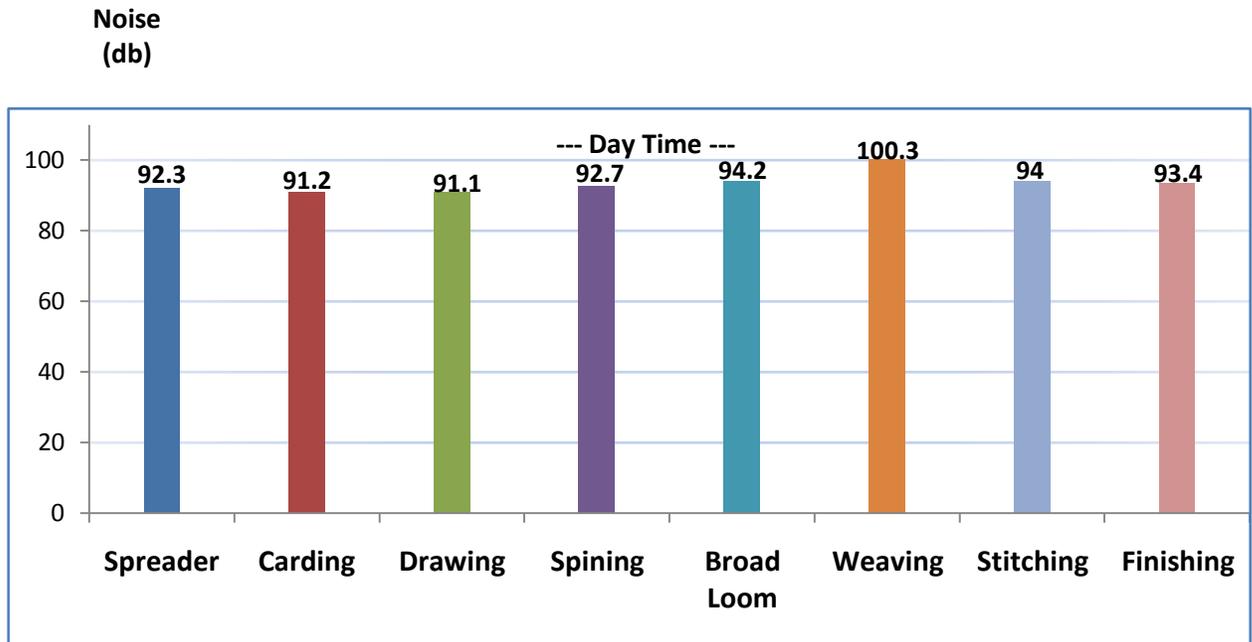


Figure 02 : Bar Diagram Indicating Department having Noise (db) higher than 90 db

**Table 02: Department wise distribution of Injured Incidents**

Departments	No. of Persons Injured	%age based on Total
Hessian Weaving	33	21.85
Sacking Weaving	18	11.92
Spinning	17	11.26
Warp Winding	16	10.60
Preparing	13	8.61
Batching	12	7.95
Weft Winding	11	7.28
Sack Sewing	10	6.62
Broad Loom /CBP	9	5.96
Beaming	6	3.97
Finishing	2	1.32
Factory Mechanic	2	1.32
Mill mechanic	2	1.32
Total :	151	100.00

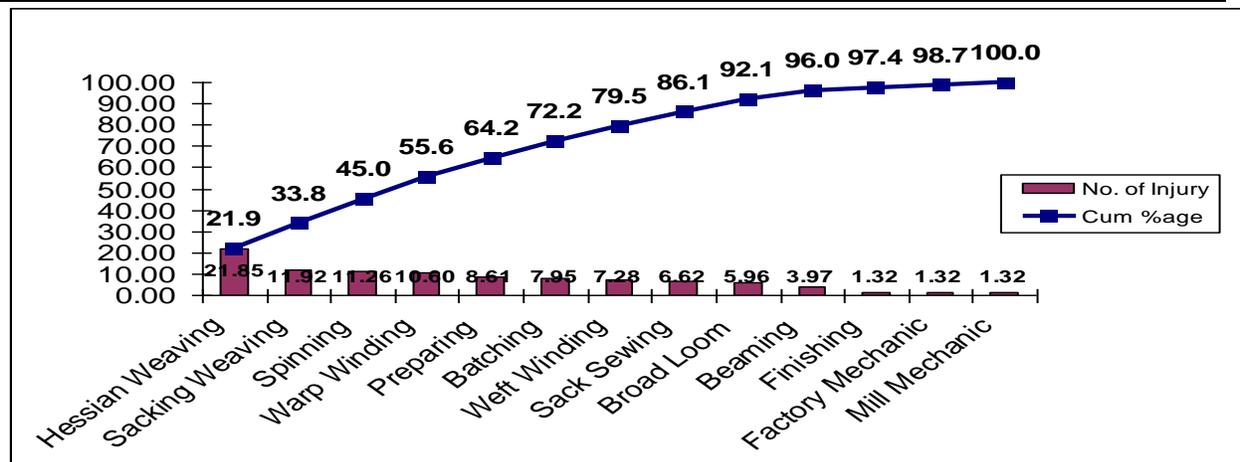
**Figure03: Paratoo chart indicating Department wise injury incidents**

Figure 02, explained the department of Jute industry, which exhibited higher dB (A) value and greater than 90dB(A). It is known that 8 hrs exposure in 90 dB(A), is the industry Norms for Noise. Working place higher than 90 dB(A) creates health hazards, accidents at the work place.

A study has been conducted at Jute Industry of BJCL for 4 months. 151 major injuries has been registered in 4 months study periods. It is found that, Hessian Weaving, Sacking Weaving are exhibiting 33 and 18 number of major injuries in such department, whereas spinning department is exhibited 17 number of major incidents of injury within study period. Figure 03 is exhibited Paratoo chart distribution of various department of Jute Industry. From the foregoing discussion, it is found that

higher noise level (DB) creates higher level of injuries, accidents at work place again proved from this study. Weaving department is exhibited higher noise level , higher than 100 dB (A) which creates higher number of injury incidents during 4 months study periods at the study place.

Table 03 is exhibiting various illumination value (lux) on various department. Obviously, Night time temperature is much less than Day time. As per norms of BIS ,Weaving , Spinning Winding should have 150 Lux . The Observed value at such department are much less than standard at night time, This should be improved at Night time for efficient running of such department.

### MANAGEMENT INITIATIVES

- Use of Mask of the employees working at Weaving , Broadloom ,Spinning and Winding , Batching Department.
- Use of Ear Plug of the Workers at Weaving and Broadloom section.
- Installation of Rapier looms (Shuttle less looms) and withdrawal of conventional shuttle looms which enhances productivity and lower health hazards.
- 24\*7 hours Emergency Ambulance Service .
- Well Equipped Dispensary and 24 hours skilled trained medical staff.
- Free consultation of Medical Doctor at dispensary
- Regular cleaning of machines and work Place
- Sufficient Led tube light at various department.
- Training of labors by external Experts for improvement of Skill, Competency of different jobs at work place.
- Maintain proper schedule of preventive Maintenance.
- Care about proper Lubrication at Different Machineries
- ESI facilities to the Workers and their family
- Enhancement of Space between Weaving machines at Weaving Section by reinstallation at New Shed of Weaving.

**Table-03:****Illumination Measurement at Various Department of the Mill**

Location	Time	Reading (Lux)	Temperature	Time	Reading (Lux)	Temperature
Selection	Day Time	537 - 542	32°C	Night Time	008 - 013	30°C
Spreader	"	151 - 155	31°C	"	018 - 030	30°C
Carding	"	050 - 055	31°C	"	024 - 032	30°C
Drawing	"	078 - 081	31°C	"	022 - 026	30.5°C
Spinning	"	106 - 110	32°C	"	031 - 084	32°C
Winding	"	113 - 115	32.5°C	"	019 - 037	32.5°C
Cop Winding	"	038 - 040	32°C	"	024 - 036	32°C
Beaming	"	079 - 081	32.5°C	"	047 - 082	32.5°C
Broad Loom	"	174 - 181	32.5°C	"	027 - 048	32.5°C
Weaving	"	138 - 151	33.5°C	"	049 - 058	32°C
Stitching	"	090 - 196	32°C	"	027 - 033	30°C
Packing	"	151 - 164	32°C	"	020 - 049	30.5°C
Finishing	"	107 - 260	32°C	"	008 - 017	31°C
Bale Godown	"	013 - 040	31.5°C	"	002 - 022	30°C

Source :- Data obtained during measurement at various department

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**CONCLUSION :**

Jute Industry contributes economic development of Indian Nation. A large number of peoples are engaged from Raw Jute cultivation to Jute goods manufacturing sector in India. Jute industry is labor intensive industry. A large number of workmen are involved in day-to-day at work place. So, control of safety , health hazards at work place are essential factors in Jute Industry. Top management of Jute Industry should maintain proper safety precautions at work place and reduction of health hazards so that workmen can efficiently participate in enhancement of productivity and product quality .as per the customers requirement.,

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