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Study on health hazards of workers in coir industry

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Abstract
Coir popularly known as Golden Fibre is produced from either green or dried coconut mainly by women workers through a series of hazardous operations in dusty and noisy environment results a number of health problems in workers need to require for an immediate attention. We can do the best use of coconut, by drinking coconut water, eating coconut and the husk can be use to produce the coir fibre. The coir fiver use in many hand craft units for making sofa sets, coir fibre, coir yarn, coir rope, curled coir, rubberised coir safety matches, coco peat, husk chip. The coir fibre making process needs very hard work which is generally done in a noisy and dusty environment. So health problem occurs to coir workers. Health problems consist of respiration problem, eye problem and also some muscular disorder like headache, back pain, hand pain, leg pain, and knee pain. Hazard also consists of cough, cold, ear and eye problems. Diseases like allergy, Byssinosis, Chronic bronchitis are seen within the coir industry workers.

Keywords: Coir, hazard, muscular disorder

Introduction
Coconut is a tropical palm and thrives best in coastal areas. India ranked first among the coconut producing countries in the world. This is about 24.55 per cent of world production. Kerala is the largest producer of coconuts contributing as much as 75 per cent of total production. Andhra Pradesh, Karnataka, Maharashtra, Goa, Orissa, Assam, Andaman and Nicobar, Lakshadweep, Pondicherry are other coir producing states. Earning foreign exchange to the tune of over Rs. 600crore annually by way of export of coir and coir products. The coir industry employs more than 6.4 lakh persons of whom a majority are from rural areas belonging to the economically weaker sections of society. Nearly 80% of the coir workers in the fibre extraction and spinning sectors are women. The Coir Board is a statutory body established under the Coir Industry Act, 1953 for promoting the overall development of the coir industry and up-liftment of the living conditions of workers engaged in this traditional industry. The Central Coir Research Institute (CCRI), Kalavoor, Alleppey and the Central Institute of Coir Technology (CICT), Bangalore, undertake research activities for the different aspects of coir industry beginning with the method of extraction of fibre to the processing and manufacture of end products. Coir is produced from either green or dried coconut mainly through a series of drudgeries in dusty and noisy environment results a number of health problems in workers.

Materials and methods
Generally the coir industries are mostly situated along coastal belts, to study the health hazards of occupational health problem a particularly survey work was conducted with a questionnaire written in local language to collect the information from the workers. The information includes Name, age, height, weight, number of engagement days in a month, experiences, working period in a year, working schedule in a day, types of operation done, posture adopted, working platform, general health issues, precaution measures, moisture content (%) of the raw materials, size of the room, number of workers working in the room, ventilation provision, types of roof, temperature and relative humidity and noise level at the site. Environmental parameters such as temperature, light intensity, dusts as well as noise level around the machine site were measured to study its effects on the workers. Instruments used for evaluation of climatic parameters are- sound level meter, respicon/dust analyser, lux meter, anemometer and hot air oven.

Working of coir industry
1. Collection of raw materials: - The raw coconuts are collected from different places nearby.

The coconut husk may green coconut or dry coconut. Dry coconut is very efficient towards coir fibre production. The green coconut has to dry first then the coir fibre extraction process held. Again the dried coconut produce large amount of dust so water must be sprinkle to the dried row coconut. The moisture content must in between 12-15%.

2. **Decortications unit:-** The raw coconut feed in to the decortications machine. This reduces the size of coconut husk which can be further used by spinning unit. This process is so dusty and noisy. In this process the worker putting the wet coconut in their hand always for their work. So water blister may see in their hand.
3. **Spinning unit: - The** reduced size of coconut feed to the unit by feeding chute. The coir fibre is separated from coir husk in this process. This process is also so dusty and noisy. The remaining materials may also content some coir fibre so it will further feed to the filtration unit.
4. **Filtration unit:-** The remaining husk from spinning unit feed to the filtration unit for finding the remaining coir fibre. The coir fibre is separated from husk.
5. **Drying unit:-** The coir fibre then sifted to sun drying unit and kept for drying. The remaining husk is very useful in root media formation in green house and the making the floor for poultry houses.
6. **Bundling unit: -** The dried coir fibre is bundled in this unit. Weight measurement of the bundled fibre done and it transport for making different coir products.

Results & discussion

The physical parameters of coir workers like name, age, education, marital status, experience, monthly income etc. are shown in table 1, workers are 35 to 55 years old having more than 10 years of experience**.** Most of them are married, very less educated and monthly income is Rs 5000-7000/-. The coir fibre making process needs very hard work which is generally done in a noisy and dusty environment so, health problem occurs to coir workers. Health problems consists of respiration problem like sinusitis, bronchitis asthma, eye problem and also some muscular disorder like headache, back pain, Different disease also seen in these coir workers like hand pain, leg pain, knee pain. Hazard also consists of cough, cold, ear and eye problems. The results of health hazards are shown in table 2. The results are in close agreement with Vijai Shanker Singh, who stated that A higher percentage of the exposed workers reported recurrent and prolonged cough (30%), phlegm (25%), wheeze (8%), dyspnoea (21%), bronchitis (13%), sinusitis (27%), shortness of breath (8%) and bronchial asthma (6%) and Metgud et al. Whose found problems were abundantly present with body pain in 91% of the subjects. Region-wise mapping of pain revealed that postural pain in low back was present in 47% while in neck was 19%. The table 3 represent the environmental parameters such as, dust level and noise produced at the work place of the study area. The coir industry generally operated in a noisy and dusty environment. The dust concentration is measured by dust analyser and it is more than 10 mg/m3. As the acceptable dust concentration is 10mg/m3. The dust is hazardous for coir workers. The noise level is measured by noise level meter. The acceptable noise is 85 dB but the noise level is high there. Figure 1 shows the hazardous work and injuries of workers in the work station. Uragoda. C.G (1975) made a clinical and radiographic study of coir workers. He reported in the British Journal of Industrial medicine that respiratory diseases such as asthma bronchitis, bysinossis, and pulmonary tuberculosis occurred due to occupational exposure. Feizal Samath (2008) wrote a paper on Spinning Livelihoods from Coir Fibre. Sabu Thomas, H. Harikrishnan & Sandhya. C. Nair (2006) studied the molecular analysis of bacterial population inhabiting coconut husk retting area.

Table 1: Physical parameters of coir workers in the study area.

S. No	Physical parameters	Persons				
		S1(female)	S2(female)	S3(female)	S5(male)	S6(male)
1	Age	37	55	40	55	35
2	Height	4’11”	5’2”	5’1”	6’	5’7”
3	Weight	47	50	57	60	62
4	Education	No	No	3rd	5th	6th
5	Marital status	Married	Married	Married	Married	Unmarried
6	Experience(yr)	3	20	7	25	8
7	Monthly income(Rs)	5000	6000	5000	5000	7000

Table 2: Health hazards of coir workers in the study area on the basis of days per month.

S. No.	Symptoms	S1(%)	S2(%)	S3(%)	S4(%)	S5(%)
1	Headache	43	45	41	35	40
2	Eye irritation	31	23	27	30	33
3	Cough & cold	29	33	29	28	30
4	Asthma	7	4	9	6	6
5	Water blasting	12	7	10	11	9
6	Deafness	4	3	4	2	4
7	Cut	8	9	6	5	7
8	Body Pain	56	61	59	60	58
9	Bronchitis	14	12	11	13	12
10	Sinusitis	23	25	27	26	28

Table 3: Environmental parameters of coir industry.

S. No.	Operation	Dust concentration(mg/m3)	Noise level(dB)
1	Decortications	22.7	95
2	Spinning	19.6	82
3	Filtering	16.7	---
4	Bundling	14.3	---

Fig 1: health hazards and water blister of workers in coir industry

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