

Environmental Science

**OCCUPATIONAL HEALTH ENVIRONMENT AT RATHI GROUP OF INDUSTRIES,
BIRATNAGAR**

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Abstract

Accident free work environment is the need of present context for sustainable growth of the business, which felt the essence of healthy and safe workforce but developing like country Nepal, the recent trend in industrial accident seems very worrying and vulnerable. This clearly indicates the urgency of the implementation and practice of Occupational Health and Safety (OHS) in industries and has been considered as an essential tool for employees' job performance. The objective of the study is to obtain the status of OHS performance in industries and its influence on job performance and workers' productivity. Fifty five respondents formed the sample size of the study for questionnaire through interview in three industries. Measurement on various OHS parameters such as light, noise and humidity was done in three industries. The light measurement prevailed that packing and finished goods store section of all these three industries were below the standard value (>50 Lux). Likewise, relative humidity was higher (up to 87%) in almost all section that of given standard value (40%-60%). Noise level was in between (49.6 dB (A) to 90.2 dB(A) but ACGIH standard is 85 dB(A). All these circumstances show that the Environmental Management System and knowledge on occupational health, safety and environment for industrial worker is not satisfactory. The management of the industries constitutes a safety committee and maintains regular monitoring, inspection and evaluation and conduct reviews for improvement

Key Words: OHS, Parameters, Job Performance

Introduction

Occupational health and safety practices is a science of designing, implementing and evaluating comprehensive health and safety programs that maintain and enhance employee health, improve safety and increase productivity, (FOH, 2007). Most people spend fifty percent of their lives within indoor environments, which greatly influence their mental status, actions, abilities and performance (Sundstrom, 1994). It is also dependent on the physical environment and its effect on health and employees' performance (Higgs, 2002). Various literature pertain to the study of multiple offices and office buildings indicated that the factors such as dissatisfaction, cluttered workplaces and the physical environment are playing a major role in the loss of employees' productivity (Carnevale 1992, Clements-Croome 1997).

Materials and Methods

The Study Area

The study area is situated in Eastern Development Region covering the industrial corridor of Biratnagar Metropolitan Municipality in Morang Districts. Geographically it is located at 26°27'48.8"N and 87°17'47.1"E (CBS, 2011). It is located in tropical zones. The altitude of study area varies from 82 m above the mean sea level.

Data collection

The field work for the research was conducted in March, 2014. The research was designed to collect primary data by using questionnaires and key informant survey formats. In field visit measurement parameters like noise, light and humidity data were taken.

The researcher adopted simple random sampling techniques. Staff from the various departments and units were considered as strata in three industrial sections i.e., manufacturing section, packing section and storage section. With a sample size of one hundred ten (110) respondents; a simple random sampling method was adopted to select Fifty-five (55) respondents from each of the stratum. For the questionnaire survey Population and Sampling Technique: The target population for the collection of data for the research is the staff in the departments and units. The administrators, supervisor, workers and security guard, formed the sample frame for the study. Sampling and measurement was done in different parameters such as noise, light illumination and relative humidity at different intervals. Measurement on work place physical parameters like noise by sound level meter (Metrosonics-db-2200 Integrating), illumination by light meter (YK-10LX –range 2,000/20000 Lux), and relative humidity by whirling psychrometer (Dimple, Research) was done in

order to obtain the level of each parameter in the workplace.

Status of occupational health, safety and environment was analyzed through site observation based on the set indicator or checklist for expert observation and survey through standard questionnaire from concern beneficiaries.

Noise Measurement

Noise measurement was done with A-weighted sound level meter at different section of Rathi Adhesive Industries, Annapurna Knitting Industries and Annapurna Winding Wire Industries. The data were taken in fast mode (a data per second) for 5 minutes that generated total 300 data sets at each time period. The noise level meter was placed at the height of 1.2 meters away from 1 meter of front wall of the buildings. From the obtained data Noise Maximum, Noise Minimum and Equivalent Noise Level were measured (Sapkota 2004). For area wise Noise measurement various data were taken from different point at manufacturing section and packing section of three Industries.

Light Measurement

Light measurement was done with light meter at different section of Industries. The measurement was done around the object in order to obtain the distribution of light at particular point where workers are working, whether illumination level is perfect for visualizing the object. These points from manufacturing section and packing section are taken approximately at the same point of all these industries. For area wise light measurement average of manufacturing section and packing section were also calculated.

Humidity Measurement

After getting the differences between the dry bulb and wet bulb the relative humidity percentage can be obtained from the relative humidity chart. The difference in degree is at the top of the chart and the dry bulb temperature is in the first column on the left. Then the relative humidity percentage appears where column and row intersect on the chart.

Data Analysis

The analysis of the collected data was done at the end of the data collection. Data of noise measurement, light measurement and relative humidity measurement was analyzed by comparing the obtained value by standard value.

For area wise noise measurement and light measurement average value of manufacturing section and packing section was also calculated. For the questionnaire the responses were classified and summarized on the basis of the information provided by the respondents.

Results

Light Measurement

Person wise light measurement was done in Rathi Adhesive Industries, Annapurna Knitting Industries and Annapurna Winding Wire Industries. From the measurement of light it was noticed that at Rathi Adhesive Industries the illumination at processing section was maximum (280 Lux) and illumination at packing section valve was minimum (23 Lux). In Annapurna Knitting Industries Illumination at administrative was maximum (338 Lux) and illumination at processing section was minimum (22 Lux). Similarly in Annapurna Winding Wire Industries illumination at administrative section was maximum (393Lux) and illumination at processing was minimum (23 Lux).

Noise Measurement

Maximum Hold Noise Measurement

Person wise Maximum hold noise level was found [96.5 dB (A)] at production section of Annapurna Winding Wire, [87.1 dB (A)] at processing section of Annapurna Knitting and [88.5 dB (A)] at production section of Rathi Adhesive Industries well as the noise level of Annapurna Winding Wire is slightly higher than both Annapurna Knitting and Rathi Adhesive which is higher than permissible limit at some section.

Person wise Minimum hold noise level was found [70.3 dB (A)] at Row Material Collection of Rathi Adhesive, [53.7 dB (A)] at Finished Goods Store of Annapurna Knitting, [53.4 dB (A)] at administrative section of Annapurna Winding Wire Industries. Minimum hold Noise level at administrative section of Annapurna Winding Wire Industries was lower than others.

Equivalent Noise Level

Person wise equivalent noise level at production section of Rathi Adhesive was high [88.6 dB (A)] and low at row material collection [75 dB (A)]. Equivalent noise level at production section of Annapurna Knitting was high [84.2 dB (A)] and low at finished goods store section [58.8 dB (A)]. Equivalent noise level at production section of Annapurna Winding Wire was high [89.3 dB

(A)] and low at administrative [64.3 dB (A)]. Person wise equivalent noise level was found high at production section of Annapurna Winding Wire and minimum at finished goods store of Annapurna Knitting Industries.

Percentage of Relative Humidity

The relative humidity of Rathi Adhesive at processing section was found to be high (78%) and at finished goods store section was low (62%). In Annapurna Knitting the relative humidity at administrative section was high (80%) and low at manufacturing section (70%). Similarly, In Annapurna Winding Wire the relative humidity is constant all the section except packing vale is (74%) and at packing valve section was low (67%).

Field Survey for HSE Management system performance

Based on the set criteria like 1: Poor, 2: Fair, 3: Satisfactory, 4: Good and 5: Excellent on HSE Management system performance, the field observation on nine different aspects or indicators prevailed that the Annapurna Winding Wire has good performance with the height score of 29 (64.4%) in compare to other two industries having less score of 25(55.5%) and 21(46.7%) respectively in Rathi Adhesive and Annapurna Knitting.

Current Occupational Health and Safety Measures

A questionnaire was intended to find out the respondent's response with their satisfactory level with the current OHS measures put in place. it can be seen that 25 respondents (45.45%) indicated that they are satisfied with the current OHS measures in place, whereas 30 respondents (54.54%) stated that they are dissatisfied with the current OHS measures in place in the industries. The responses indicate that not much is being done about OHS (Brandt-Rauf, 2001)

Discussion

From the noise measurement, it was found that the higher noise level was measured in production and processing section whereas lowest noise level at packing valve and finished goods store section of all the industries. Ten places were found exceed TLV {i.e.85dB(A)} which was in the range 85.1 dB(A) to 96.5dB(A).

From the reading of the noise meter it was found that the noise levels of these industries were not within the threshold limit. Though the noise level was within threshold limit, from the field observation and gathered views from respondents the study shows that there is the chance of physical health hazard (Ahmad, 1998) because maximum hold at row material collection was found to be 96.5dB(A) which is very high to 85 dB(A) as indicated in ACGIH value for 8 working hours. There is equal chance of getting psychological/mental disorder like irritation, frustration etc.

The measured value seemed to exceed the TLV in compare to the comfort threshold limit value which is in the range of lower value 40% and higher value 60%. High humidity decreases the evaporation rate and promotes chemical reaction in materials and affects the amount of allergens in the indoor environments (Arundel et al, 2010). It also causes both dust mite population and mold colonies to grow which increases total allergen load (Memarazadel, 2010).

It came to light that occupational health and safety measures put in place at the industries are not sufficient. Most of the staffs are dissatisfied with the current occupational health and safety measures.

One major requirement in any occupational health and safety programme (DeJoy, 1994) is to constitute a safety committee. It was found out from the analysis that the industries does not have safety committee constituted with the task of dealing with all occupational health and safety issues for the industries. It was however found that safety committee is constituted any time there is a certain issue bothering on health and safety (Bohle & Quinlan, 2000).

Conclusions

One major requirement in any occupational health and safety programme is to constitute a safety committee. It was found out that the industries does not have schedule in terms of specific periods for training staff on occupational health and safety. It was found that workers are not satisfied with current measures being put in place by management to improve on existing occupational health and safety measures in the industries. This was confirmed when all staff indicated that effective occupational health and safety policy has a significant impact on the performance of the job.

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