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### RESEARCH ARTICLE

#### A STUDY ON NOISE POLLUTION AT STONE QUARRYING INDUSTRY NEAR DHARWAD.

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#### Abstract

Noise pollution has been recognized worldwide as an environmental problem that has wide spread consequences on health and well being of human beings. Unfortunately, we are not doing enough to curb this menace. The present work documents the noise pollution levels at stone crushing unit near Dharwad. The noise levels were recorded at two different processes related to the stone crushing activity. The noise levels during blasting process ranged between  $102.8 \pm 2.6$  db and  $130.4 \pm 4.6$  dB. During crushing process the noise ranged from 97 db to 116.2 dB. The sound level measurements suggest that there are areas that are noisy and could subject workers to overexposure to noise. All workers should be made aware of the sound levels around all equipment and in the processing plants and be instructed to utilize hearing protection devices.

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#### Introduction:-

The word 'noise' is derived from the Latin term 'nausea'. It has been defined as "unwanted sound that is dumped into the environment". Noise pollution has attracted much attention due to the increased awareness of its effect on human and animal health. Apart from affecting living beings, noise also adversely affects inanimate beings like buildings, heritage monuments etc.

Noise pollution one of the main pollution of the environment causing various hazardous consequences for human life. Noise not only impairs sensibility to auditory stimuli by masking effects, it has other consequence too. Studies have proved that a loud noise during peak hours creates tiredness, irritation and impairs brain activities, so as to reduce thinking and working abilities. Its general effects on human being are that, it covers disturbance in sleep which lead to other side effects

Based on its origin, noise pollution can be divided into two categories viz., Natural and man-made. Natural sources of noise include air, volcanic eruptions, seas, rivers and thunder etc. Man made noise can be chiefly attributed to machines and modern equipment of various types including automobiles, trains, aeroplanes, explosives, firecrackers and others. Noise affects human life in many ways. It influences sleep, hearing, mental and physical health and communication. Irrespective of the source, noise is a pollutant and besides its contribution to stress levels, impaired hearing, and other body dysfunctions are yet to be fully understood. Noise can cause deafness. Some empirical research conducted on pregnant female mice reveals that air craft taking off which bring 120 to 160 dB caused miscarriages in them (Baldwin, 2007), if the findings on mice are made applicable on human being. The effect of these categories includes, annoyance, tensions in muscles, nervous irritability and strain. The physiological features like - breathing amplitude, blood pressure, heart-beat rate, pulse rate, blood cholesterol are affected, behavioural

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changes also seen. It has been reported that performance of school going children is poor in comprehension, when schools are in the busy traffic area. Noise can cause irritation, which results in learning disabilities. Mining is one sector that has received less attention. Studies involving the monitoring of worker noise exposures, characterizing equipment sound levels and dominant noise sources, evaluating engineering noise controls, analyzing hearing protection device (HPD) effectiveness, and testing of improved sound level monitoring techniques specifically for mining systems, are being conducted Bauer., and Babich (, 2006). However, in India such studies are limited. The present work is an attempt to report the noise pollution levels at stone quarrying industry at Kadankoppa near Dharwad.

### Materials And Methods:-

A stone crushing unit located near Kadankoppa village in Kalaghatagi taluk of Dharwad district (  $15^{\circ}15'24.8''$  N,  $75^{\circ}01'60.0''$  E) was selected to record the noise pollution study (PLATE-I). Periodic noise levels were recorded in this stations. In the initial stage preliminary observations were carried out to note the peak time slots during day time when noise levels are high. The sound levels were recorded using TES1350 (A) Sound Level Meter (SLM) The recording were made by holding the SLM at a distance of 20 mts from the blasting crushing unit. Recording were made for a minimum of 30 minutes to maximum of 90 minute duration at a slot of five to ten minutes interval. Recording of blasting activity was noted regularly for a period of 10 days. The noise levels of crushing unit was made on the last day of observation at the peak crushing hours.

**Plate I:-** Kadanakoppa crushing unit

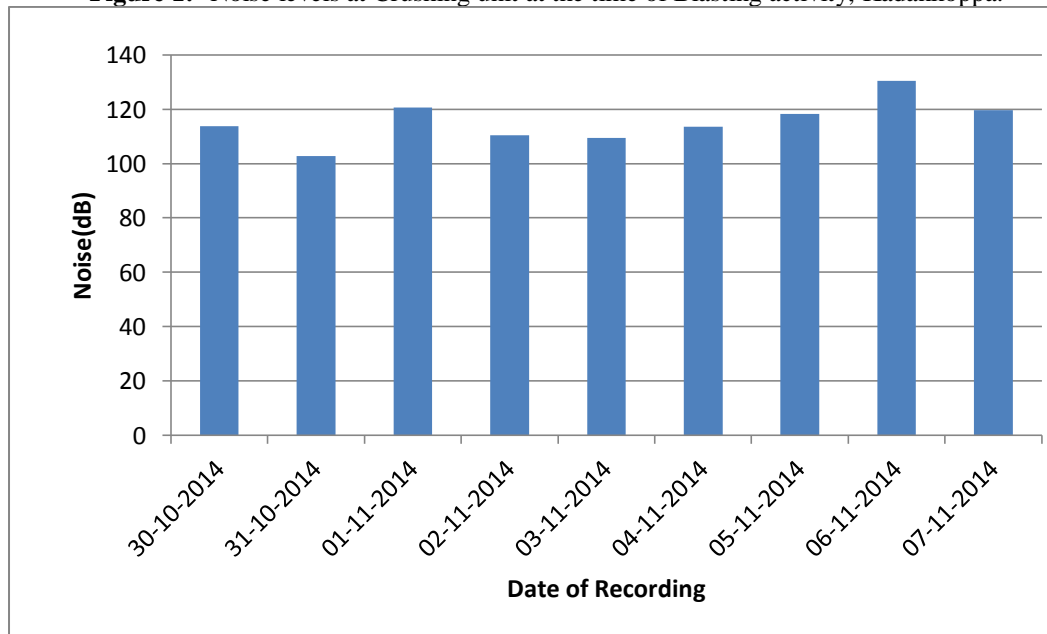


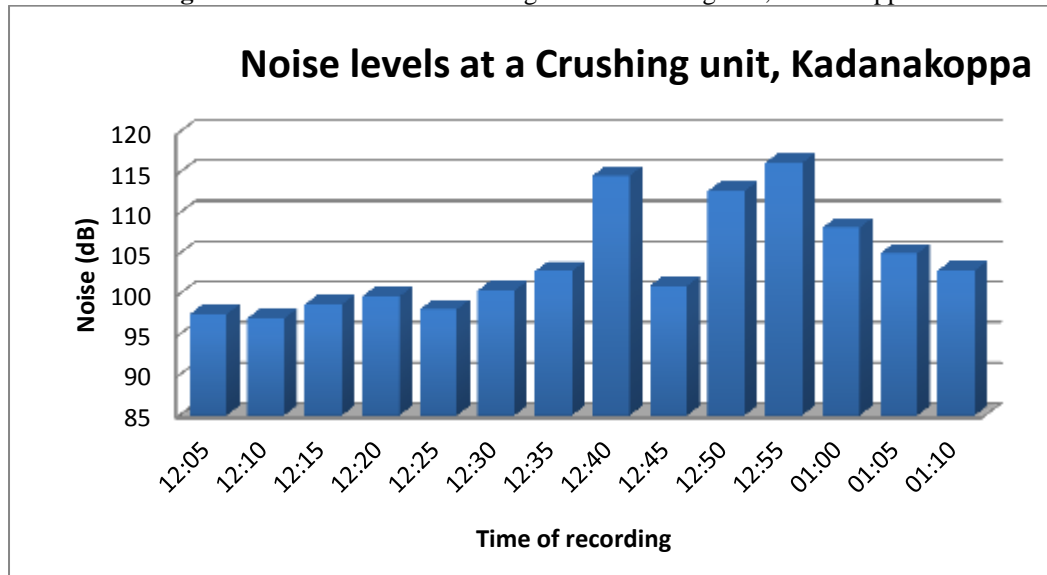
**Table 1:-** Noise levels at Crushing unit during blasting activity.

S. No	Date	Average Noise level Noise (dB)
1	30-10-2014	113.8 $\pm$ 3.26
2	31-10-2014	102.8 $\pm$ 2.6
3	01-11-2014	120.7 $\pm$ 2.6
4	02-11-2014	110.4 $\pm$ 1.8
5	03-11-2014	109.4 $\pm$ 2.2
6	04-11-2014	113.6 $\pm$ 3.8
7	05-11-2014	118.3 $\pm$ 2.7
8	06-11-2014	130.4 $\pm$ 4.6
9	07-11-2014	119.7 $\pm$ 3.4
10	08-11-2014	120.7 $\pm$ 2.4
	<b>Mean (SD)</b>	<b>115.67 <math>\pm</math> 7.6</b>

**Table 2:-** Noise levels at Stone Crushing unit at 8<sup>th</sup> Nov, 2014.

S. No	Time	Noise (dB)
1	12:05	97.5
2	12:10	97
3	12:15	98.7
4	12:20	99.7
5	12:25	98.1
6	12:30	100.4
7	12:35	102.8
8	12:40	114.6
9	12:45	101
10	12:50	112.7
11	12:55	116.2
12	01:00	108.2
13	01:05	105
14	01:10	102.9
	<b>Mean (SD)</b>	<b>103.9 <math>\pm</math> 6.5</b>

**Figure 1:-** Noise levels at Crushing unit at the time of Blasting activity, Kadankoppa.

**Figure 2:-** Noise levels at Crushing unit at Crushing unit, Kadankoppa

### Result and Discussion:-

In this industry the noise is produced during blasting activity and crushing activity. The readings were taken during different processes of 1) Blasting activities. 2) Crushing activity. The noise levels during blasting activities were recorded for 10 days (Table-1 figure1) the noise levels ranged between 102.8 and 130.8 dB (Figure- 1). The noise levels were also recorded during crushing activities. The reading ranged between 97.0 and 116.2dB (Table-2, Fig-2). The Noise levels at stone crushing unit was high particularly during blasting activities where it sometimes reached as high as 130.4 dB and crushing unit has the maximum of 116.2dB. Naik *et al* (2007) reported high levels of noise with a range of 133dB to 156dB during blasting process at a stone crushing unit situated in Bangalore district. The average noise levels during crushing activity was  $115.67 \pm 7.6$  similar levels of noise was reported by Naik *et al* (2007). Farzana *et al* (2014) from Bangladesh reported maximum noise level at shrimonto and R.M. stone crusher are 91 dBA and 102 dBA respectively at nearest point from crushing machine which are less than the present observation. Continuous exposure to such high noise may cause health problem to the people living in that area. Since there is no medicine to cure hearing loss, prevention to overt exposure is the only alternative left. Noise in the stone quarrying industry is regarded as a major annoyance and may lead to hearing loss and perhaps even cause adverse physiological and psychological effect. The sound level measurements suggest that there are areas that are noisy and could subject workers to overexposure to noise. All workers should be made aware of the sound levels around all equipment and in the processing plants and be instructed to utilize hearing protection devices.

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