# INTRODUCTION

Many individuals are exposed to noise in workplace environments. Although this is true, not all workers are exposed to levels of noise that are hazardous to the auditory system. A simplistic definition of noise is an unwanted sound from any source. It is also described as audible acoustic energy that adversely affects the physiological or psychological well-being of individuals **(Kryter, 1985)**.

Noise like any sound is defined in terms of its duration, intensity and frequency.

## Duration or time:

Temporal patterns of external noise are described as continuous, fluctuating, intermittent, impact or impulsive **(OSHA, 1981).** Continuous or steady noise remains relatively constant during exposure. Overall level does not vary more than ± 5 dB **(Guignard, 1973).** Meanwhile Fluctuating noise rises and falls in intensity over time. This noise is continuous but the level rises and falls more than 5 dB **(Melnick, 1985).** Another pattern is intermittent noise which is a noise with

short breaks of effective quiet of few seconds to an hour **(Ward, 1991).** Finally Impulsive or Impact noise which is a sound with a rise time of not more than 35 m sec. to peak intensity and a duration of not more than 500 m sec. to the time when the level is 20 dB below the peak. If the impulses recur at intervals of less than 1 sec, they shall be considered as continuous **(OSHA, 1974).** Table (***i***) shows some examples of such noises.

***Table (i) Examples of different types of noise*** **(Goldstein, 1994)**

| Types of exposure | Typical examples |
|---|---|
| Steady | Weaving room noise; sound of a water fall, shipboard, interior of vehicle or aircraft noise, Turbine noise, hum of electrical machines. |
| Fluctuating | Traffic noise, airport noise, recreational noise, Radio and TV. |
| intermittent | Light traffic noise, occasional aircraft flyover noise and many kinds of domestic noise (e.g. use of electrical appliances in the home). |
| Impulsive | Gunshot, hammering and explosions, |

## Intensity:

It is the physical acoustic strength of the sound i.e the magnitude of particle vibration and the rate of sound energy flow. Because it is difficult to measure intensity directly and because sound is a pressure fluctuation, intensity is described for practical convenience in terms of the amplitude of the pressure fluctuation. Thus, sound pressure is a fundamental measure of sound intensity **(Beraneck, 1971 and Burns, 1973).**

The psychologic correlate of physical acoustic intensity is the sensation of loudness. Although perceived loudness is very closely related to acoustic intensity, the frequency of a sound stimulus as well as the physiologic characteristics of the ear somewhat modify the sensation of loudness.

## Frequency:

It is the rate of a sound wave's periodic fluctuations which occur per unit of time usually specified as one second. In general, a young adult with normal hearing has an auditory range from about 20 Hz to 20000 Hz. Moreover, the ear is not equally sensitive to all frequencies within the audible range, and frequency response of the ear varies somewhat with the

magnitude of the sound **(Davis and Silverman, 1970)**. Human ears are generally most sensitive to frequencies in the range of 1000 to 4000 Hz.