ABSTRACT

The major objectives of this research are to study the occupational hazards of people (i) working with video display terminals, (ii) working in a noisy environment and, (iii) involved in manual lifting of loads.

The introduction of video display terminals (VDT) into the work place has brought about increased visual complaints such as eye strain, eye soreness, blurred vision, headache, etc. Eye strain is one of the major problems reported by millions of people world over working with VDTs. Eye strain is defined as a kind of visual discomfort that occurs due to prolonged study of visual details with reduced eye movements. Because of these reasons, studies on eye strain due to continuous exposure to VDT gained importance.

An experimental investigation has been made to study the effects of viewing angle with VDT, viewing distance of users from the VDT, time of exposure and illumination level on eye strain and the optimal values for these factors have been determined.

Noise is very physical and noticeable to most employees. Questionnaire investigations in industrial plants show that workers usually single out noise as the most important problem. Any unwanted sound can be defined as noise. If the decibel level of noise is above the acceptable values (85
dB(A)) it causes noise induced hearing loss, increase in blood pressure, headache, irritation etc to the people. Therefore study of noise and its effect on the hearing ability attracts the attention of researchers.

The effect of noise on the hearing ability of drivers and technicians working in a transport undertaking has been analysed. The results show that (i) Loss of hearing ability of drivers and technicians increases with the noise exposure duration, (ii) Loss in hearing ability of the drivers is more in the left ear near the engine than in the right ear, (iii) Loss in hearing ability is more for the technicians who are exposed to intermittent noise than for the drivers who are exposed to continuous noise and, (iv) Noise levels are beyond 95 dB(A) at maximum throttle of the bus at static condition of bus and may increase on roads with loads which may result in significant hearing damage risk for the drivers.

Manual Material Handling (MMH), especially lifting, poses a risk to many and considered the prime cause of back pain and various other joint impairments. This in turn leads to increased worker compensation and loss of productive man-hours. Approximately one third of all jobs in industry involve MMH. Low back pain is one of the most prevalent and costly work related injuries. The study of the lifting posture, the amounts of weight the man can safely lift are the areas investigated by Ergonomists.
A biomechanical model has been developed, that can optimise the lifting posture for minimum effort. The model has been validated with practical data available from literature. This model can also be used to predict the lifting capabilities of individuals. This will be of great help to industrial managers for designing manual lifting tasks. A finite element model to study and analyse the stresses on Functional Spinal Unit has also been developed. The effort to be taken for in vivo and in vitro data collection and analysis are reduced considerably in the finite element modelling.