NOISE AND LIGHTING AS PHYSICAL STRESSORS IN A PRINTING LABORATORY – A CASE STUDY

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Abstract

Noise, illumination, temperature, and pressure are the primary external factors influencing the working environment and employee productivity. Physical variables were investigated in this paper over three weeks to determine whether the printing laboratory is suitable for students' practical training and employees' productive work. The A-weighted Sound Pressure Levels in decibels of different types of machines were determined. The lowest measured $L_{eq}$ level was 63.90$\pm$2.45 dB(A), while the highest was 80.50$\pm$3.90 dB(A). Because the mean value of the noise levels obtained for all investigated machines exceeded the acceptable level for laboratories and classrooms, as stated in Serbian guidelines, a frequency analysis at the 1/3 octave band was performed. The frequency spectra of the machines operating daily are comparable to the spectrum of human speech, resulting in impaired communication, primarily between students and professors during laboratory classes. The horizontal illumination on worktables in the first room ranged from 206.5 to 393.75 lx. The values in the second room, where student desks are located, ranged from 141.8 to 297 lx, with a mean value of 201.8$\pm$10.1 lx, significantly lower than the range recommended for classrooms and laboratories. The findings of this research indicate that the measured values of the aforementioned parameters significantly vary from what is considered appropriate for educational settings. Although most students and professors do not perceive this ambient atmosphere as disturbing, it stimulates the organic system and negatively affects overall health.

Keywords: ambient parameters, lighting, noise, printing machines, working conditions

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