



*“Gheorghe Asachi” Technical University of Iasi, Romania*



---

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

**Selena Samardžić, Aleksandra Mihailović\*, Savka Adamović, Dragan Adamović,  
Bojan Banjanin, Vladimir Rajs, Robert Lakatoš**

*University of Novi Sad, Faculty of Technical Sciences, Trg Dositeja Obradovića 6, 21000 Novi Sad, Serbia*

---

### **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

*Received: April, 2022; Revised final: February, 2023; Accepted: February, 2023; Published in final edited form: March, 2023*

---

---

\* Author to whom all correspondence should be addressed: e-mail: [zandra@uns.ac.rs](mailto:zandra@uns.ac.rs); Phone: +381 631028123; Fax: +381 216350770