

## **Abstract**

Cafes are specific places with increasing popularity these days. However, the spaces used mainly for meetings, work or studying have not been yet explored in detail from the microclimate point of view, although suboptimal microclimatic conditions can have a negative effect not only on employees but also on customers.

The bachelor thesis deals with an evaluation of air quality in coffee shops and juxtaposes its findings with the legislation that defines beneficial conditions for the particular environment. The aim of the thesis is to determine whether the values of temperature, relative moisture including the concentration of PM<sub>2,5</sub> and carbon dioxide, based on an example of three specific coffee shops situated in the center of Prague, correspond with the acceptable standard quotes stipulated by the law. To that end, the author explores three assumptions: 1) the selected spaces are not strictly controlled by the Public Health Authority in comparison for instance with hospitals and therefore the recorded values do not correspond with the regulations, 2) the number of people worsens the CO<sub>2</sub> values and 3) coffee shops with an entrance facing a busy street show a higher concentration of PM<sub>2,5</sub>. The results were achieved by experimental measuring in Winter months.

The theoretical part defines the concept of microclimate, describes problematic of indoor spaces where it differentiates in detail the three primary factors - physical, chemical and biological, contributing to indoor air quality. The experimental part provides the information about the measurement process, the DustTrak DRX (8533, TSI) instrument for detecting PM<sub>2,5</sub> concentrations and the Telaire 7001 hand-held carbon dioxide sensor, which is able to monitor and record temperature and relative humidity values in addition to CO<sub>2</sub>. For ten days of measurement, the concentrations of the mentioned microclimatic factors in all three cafés were evaluated as acceptable by decree č. 316/2007 Sb. Furthermore, a strong positive correlation between the number of people and CO<sub>2</sub> concentrations was shown, and on the contrary, a very weak dependence between the number of people and temperature or RH values was found. In Café B, the assumption that the entrance to the café from a traffic-controlled street would have an effect on higher concentrations of PM<sub>2,5</sub> was subsequently confirmed. In comparison with the dependence of the concentrations of the mentioned factors on the time of day, the dependence was demonstrated only for CO<sub>2</sub> and PM<sub>2,5</sub>, the dependence of concentration on the environment of three selected cafes was demonstrated only for PM<sub>2,5</sub>.

Key words: microclimate, cafes, PM<sub>2,5</sub>, carbon dioxide, temperature, relative humidity