

# **Evaluation of indoor air quality in offices**

## **Influence of carbon-dioxide concentration on human well-being and intensity of office work**

Thesises

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### **1.1. The impact of CO<sub>2</sub> concentration on human well-being in case of office work**

*The impact of CO<sub>2</sub> concentration on human well-being was examined with objective and subjective indexes by laboratory measurements.*

*I point out that the well-being of young healthy persons declines rapidly in closed space over 3000 ppm carbon-dioxide concentration after 2x70 minutes. Differences were considered significant when  $p \leq 0.05$ .*

### **1.2. The effect of CO<sub>2</sub> concentration on the objective physiological parameters of the human body**

*Applying to laboratory measurements the impermissible load of human organisms of young healthy persons was confirmed by the objective physiological parameters in closed space over 3000 ppm carbon-dioxide concentration after 2x70 minutes. Differences were considered significant when  $p \leq 0.05$ .*

*According to the ISAX system and the heart period variability is successfully applicable for the examined scope of indoor air although these has never used as instrument and method for impact of CO<sub>2</sub> concentration on human well-being and office work intensity.*

### **1.3. The effect of CO<sub>2</sub> concentration on the intensity and the quality of mental work under 3000 ppm CO<sub>2</sub> concentration**

*I was examined the intensity and the quality of office work during laboratory measurements.*

*I find till 3000 ppm the change of CO<sub>2</sub> concentration results lower variance in the difference between the intensity and the quality of mental work than the difference of mental capacity of the examined persons.*

*I point out that the intensity and the quality of mental work of healthy, young persons declines significantly staying over 3000 ppm CO<sub>2</sub> concentration in closed space. Differences were considered significant when  $p \leq 0.05$ .*

### **1.4. The determination of the necessary fresh air**

*According to the laboratory measurements I specified that during office work the well-being and the mental workload of humans declines rapidly when there is supplied less than 7.7 m<sup>3</sup>/h, person fresh air. To determine this result I have used following circumstances: office work,  $k_{indoor}=3000$  ppm and  $k_{outdoor}=400$  ppm CO<sub>2</sub> concentration. Differences were considered significant when  $p \leq 0.05$ .*