

# Determination of Normal Concentration Levels of Cd, Pb, Hg, Cu, Zn and Se in Urine of the Population in the Czech republic

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## Summary

*Knowledge of normal levels of concentrations of trace elements (Cd, Pb, Hg, Cu, Zn, and Se) in the population serves, among others, in design of regulations concerning health protection, determination of exposition limits and prevention of diseases caused by deficiency of trace elements. Concentrations of the named elements in urine of the Czech population were determined by means of atomic absorption spectrometry. The urine has been collected during 1996-2000 from 1192 individuals (816 males and 376 females, average age 34.6 years) and 2008 children (1052 boys and 956 girls, average age 9.9 years). Mineralization in a microwave digestion system was used in sample preparation. The accuracy of results was checked by means of the Control Materials Seronorm 403125 and BioRad 69041. Values of concentrations of the trace elements in urine found for adult (medians) were 0.36 mg Cd.g-1 creatinine, 10.6 mg Cu.g-1 creatinine, 0.68 mg Hg.g-1 creatinine, 3.3 mg Pb.g-1 creatinine, 6.2 mg Se.g-1 creatinine, and 397 mg Zn.g-1 creatinine, respectively. Statistically significant differences between men and women have been found in the concentrations of Cu and Hg. In the juvenile population following concentrations have been found: 0.29 mg Cd.g-1 creatinine, 16.1 mg Cu.g-1 creatinine, 0.32 mg Hg.g-1 creatinine, 4.8 mg Pb.g-1 creatinine, 10.2 mg Se.g-1 creatinine and 460 mg Zn.g-1 creatinine. Statistically significant differences between boys and girls were found only in Cu and Hg concentrations. Concentrations of the studied elements correspond to the published values concerning population not exposed professionally.*

**Key words:** trace elements, urine, reference values

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