Multi- Elemental Nuclear Analysis of soil reference material

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The concentration of the elements in the IAEA /SOIL-7 reference material was obtained using the parametric and at k_0-standardization methods of neutron activation analyses. For parametric analise the Cd Ratio Technique was used for the measurement of neutron flux distribution, in the IEA-R1 nuclear reactor at IPEN/CNEN and the concentration was obtained by using an in-house software, which correlated the measured parameters, i. e., neutron flux, net area and efficiency of the selected gamma ray with the constants physics involved (the decay constant; the atomic mass, the Avogadro's number, the cross section for the selected capture reaction, the isotopic fraction and the intensity of the gamma ray). For k_0-standardization measurements a set of monitors (Al-(0.1%)-Au discs and Zr foils) were used for neutron flux determination in the TRIGA MARK I IPR-R1 nuclear reactor at CDTN/CNEN, and the concentration was obtained applying the commercial KayWin software package. The performance of these procedures is compared and the advantages and disadvantages of each method and sources of errors are discussed.