

Biomonitoring of Air Metal Pollution Using Plants by Means of Neutron Activation Analysis – Egypt

W.M. Badawy^{1,3}, H. El Samman², A. El-Morsi², Marina V. Frontasyeva³, Y. Sarhan²

¹*Radiation Protection & Civil Defense Dept., Egyptian Atomic Energy Authority (EAEA), Nuclear Research Center, 13759 Abu Zaabal, Egypt*

²*Menoufia University, Faculty of Science, Department of Physics, Shibin El-koom, Egypt*

³*Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, 6, Joliot Curie str., 141980, Dubna, Russian Federation*

The present work was conducted to give a comprehensive description of the biomonitoring of heavy and trace elements for air pollution assessment using two kinds of plants (*Eucalyptus Globulus* and *Ficus Nitida*) in two different regions in Egypt (Cairo and Minoufia). The concentrations (mg/kg) of thirty-two elements were determined in 30 leaves samples. The collected samples were subjected to neutron activation analysis NAA at REGATA, in the pulsed reactor IBR-2 in Dubna, Russian Federation. The obtained concentrations were compared with those published worldwide. The results are in line with those published in the literature except for Na, Al, Cl, Ca, Sc, Ti, V, Cr, Fe, Co, Ni, As, Se, Br, Sr, Sb, La, Sm, Tb, Hf, Ta, Th, and U are significantly high. The descriptive statistics of the obtained concentration revealed that the aforementioned concentrations in Minoufia are significantly higher than, those in Cairo, in spite of the intensely population, heavy traffic, and vehicles waste disposed in Cairo. The remarkable increase of metals in Minoufia region is most probably due to the uncontrolled of industrial and domestic waste disposal. In addition, the study shows the *Ficus Nitida* plant responsiveness to metals is higher than *Eucalyptus Globulus*.

Keywords: plants biomonitoring/ air pollution/ NAA/heavy and trace elements