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## Correlation study of air pollution and cardio-respiratory system diseases through NAA of atmospheric pollutant biomonitor

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Atmospheric pollution is today one of the many problems facing mankind. This problem affects everything from the natural environment to human health and to climate. As result authorities of all over the world have become very preoccupied with the adverse effects derived from air pollution. The objective of this study was to apply Neutron activation Analysis (NAA) to collect air pollution data in the city of São Paulo, Brazil in order to investigate pollutant effects on cardio-respiratory system. *Canoparmelia texana* lichenized fungii species was chosen for passive biomonitoring of atmospheric pollutants. The two population groups selected for this study were, one of children under 5 years and the other of adults over 45 years. Lichen samples collected in São Paulo city were cleaned, freeze-dried and ground for the analysis. Aliquots of samples were irradiated at the IEA-R1 nuclear research reactor for short and long periods along with synthetic element standards. The induced gamma activities of the samples and standards were measured using a gamma ray spectrometer with an HPGe detector and the concentrations of As, Ba, Br, Ca, Cd, Cl, Co, Cr, Cs, Fe, Hf, K, Mg, Mn, Na, Rb, Sb, Sc, Se, Th, V, Zn and lanthanides were determined. For quality control of the results, certified reference materials were analyzed. Mortality data for the population due to cardio-respiratory diseases were obtained from the database of the Secretariat of Health of the São Paulo Municipality for the years 2005 to 2009. Results obtained indicated that the origins of pollutants in São Paulo city are due to vehicular and industrial emissions. The statistical treatment of Pearson's correlation applied to the results of lichen element concentrations and mortality rates indicated significant positive correlation for the elements Co, Mn and Zn for adults.

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