

## **INDOOR AIR QUALITY IN BRAZILIAN SCHOOLS NEARBY INDUSTRIES: THE CASE OF CURITIBA**

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The mitigation of pollution released to the environment originating from industrial sector has been the aim of all policy-makers. Among heavy industries, oil refineries and lime industries have been identified as large emitters of a wide variety of pollutants. Air pollution caused by such industries has become a serious problem with potential effects to human health, especially in developing countries. In metropolitan region of Curitiba, South of Brazil, a correlation has been shown between the lime production and the number of persons who need respiratory treatment in a local hospital, indicating that the lime industries can cause deleterious health effects in the exposed population. Although this concern is controversial, petroleum refinery has been also linked to some adverse health effects for people living nearby. Apart from home, school is the most important indoor environment for children and there is increasing concern about the school environment and its impact on health, also in developing countries where the prevalence of pollution is higher. As most of the children spend more than one third of their time in schools, hence it is critical to evaluate the particulate matter level in such complex environment. Size segregated aerosol samples were collected for analyses of bulk and single particle elemental and molecular compositions. They were analysed by electron probe micro-analysis, utilising facilities for low-Z element determination, and by energy-dispersive x-ray fluorescence, to investigate the elemental composition of individual particles and bulk samples, and by micro Raman spectrometry, to elucidate the molecular composition. Results are interpreted separately and as a whole with the specific aim of identifying compounds that could affected the health the students. In view of the chemical composition and size distribution of the aerosol particles, local deposition efficiencies in the children respiratory system were calculated, revealing the deposition of particles at extrathoracic, tracheobronchial and pulmonary levels.

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