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Change in atmospheric Lead levels in Colombo after phasing out Leaded gasoline in Sri Lanka

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A number of studies in Sri Lanka have reported the presence of roadside ambient lead in high concentrations and also the occurrence of higher urinary and blood lead levels in occupants in urban areas than that of rural population. Lead is highly toxic and exposure causes severe disorders to metabolism. Quantitatively, lead pollution is mostly resulted by the use of tetra Ethyl Lead (TEL) additive in leaded gasoline. However, with the advent of the Government's "One Hundred Days Programme", the Ceylon Petroleum Corporation discontinued blending gasoline with lead additives in April 2003.

This research programme encompassed the period of discontinuation during which the studying of ambient lead levels by periodical monitoring in three selected locations was carried out from July to December 2003. Both particulate lead and total lead levels were sampled on eight and three hourly basis respectively during daytime at a regularly interval of once in eight days. Method followed for particulate lead was high volume sampling, wet-ashing and spectrometric analysis. Total lead was bubbling air to an alkaline dithizone medium and spectrometric analysis. Sampling height was maintained 1.5 - 2 m above the ground level.

During the study period, the total atmospheric lead levels decreased significantly at all three locations by 82 % at Fort, 84% at Meteorological Department at Colombo 07 and 81.5% at NBRO premises at Colombo 5. Comparison of present total lead levels at NBRO with past data indicates a reduction of more than 90% (acceptable at 95% confidence) over the period of past ten years. The results also indicate a gradual decline in ambient particulate lead levels, which is not comparable to the trends of total lead levels may be due to the contribution of particulate lead from fugitive dust generated from previous deposits. Similar declining patterns were also observed in lead emissions in exhaust gases of gasoline driven vehicles.

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