

## **E2-38: Assessment of blood lead levels of the population exposed to vehicle emissions**

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A study conducted in the Colombo Metropolitan area indicates that the average lead concentration in ambient air ranges between 0.20 - 0.55  $\mu\text{g}/\text{m}^3$  and the overall average is about 0.38  $\mu\text{g}/\text{m}^3$ . It is generally recognised that over 90% of atmospheric lead concentration in most urban areas is associated with gasoline lead emissions. It has been reported that there is a close relationship between blood lead level and gasoline lead. Therefore the primary objective of this study was to assess the blood lead levels of some selected groups who are exposed to vehicle emissions within the Colombo Metropolitan area.

The traffic policemen serving in the Colombo Metropolitan area were the first target group in this study. Street vendors, Three-wheeler drivers and Motor cycle riders are also exposed to vehicle emissions directly and were included in this study. The analysis of the blood lead levels of the general population who are presumably least exposed to vehicle emissions was performed separately for comparison. Since blood collected by venipuncture has a low likelihood of contamination compared to fingerprick samples, venous blood was the preferred specimen for analysis and was used throughout the project. Atomic absorption spectrophotometric method with graphite tube atomization was used as the analytical procedure. Analytical grade reagents were used in this study and all glassware were cleaned

This method reads all forms of lead such as metallic lead, lead halides, oxides and organo metallic lead which are probably present in the atmosphere.

The results obtained by this new method indicate that the ambient lead concentration in a residential area, of Colombo urban environment was about  $200 \mu\text{g}/\text{m}^3$  and about  $400 \mu\text{g}/\text{m}^3$  in the vicinity of a main road. Whereas threshold value of ambient lead level stipulated by the Central Environmental Authority (CEA) is  $2\mu\text{g}/\text{m}^3$  for 24h average.