INVESTIGATION ON THE DETERMINATION OF LEAD IN THE ATMOSPHERE

BY

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ABSTRACT

The main aim of this research project involves the development of a reliable method to monitor Lead (Pb) in the atmosphere, since the existing standard methods (WHO & ASTM) measure only a fraction of total Pb, in the form of particulate matter that can be trapped by a 0.45μm filter paper. In the proposed method no digestion procedure was used and it was directed towards the possible determination of all forms of Lead in the atmosphere.

In this method, a sample of air was bubbled through a sample train of 6 impingers each containing dithizone and other masking agents in basic medium. Finally, the Pb-dithizonate was extracted into the chloroform layer and analysed spectrophotometrically.

The spectrophotometric results were compared with those of other methods such as atomic absorption spectrophotometry and AC polarography. A reasonably good comparison was obtained. It was also found that the first two impingers of the sample train absorb more than 65% of the total Pb.

The results obtained by this new method indicate that the ambient Pb concentration in a residential area, of Colombo urban environment was about 200 $\mu g/m^3$ and about 400 $\mu g/m^3$ in the vicinity of a main road, whereas the threshold value of ambient Pb, published by the Central Environmental Authority is 2 $\mu g/m^3$ for 24 hour sampling.