SUNANTA THIPMALMAS : DETERMINATION OF LEAD CONCENTRATION IN AIR USING X-RAY FLUORESCENCE TECHNIQUE. THESIS ADVISOR : ASSO. PROF. TATCHAI SUMITRA, Dr. Ing. 94 PP.

Determination of lead concentration in air using x-ray fluorescence was done mainly by the EDX technique. The measuring system consists of an x-ray ring source, a HPGe detector ORTEC MODEL GLP - 06165 and an MCA CANBERRA SERIES - 40. It was found that the most suitable source for the analysis was the 1.11 GBq Pu-238. The system was arranged coaxially with the source placed in the middle, directly on the detector. The optimum distance between the source and the sample was 7 mm, and the counting time was 2000 s. The minimum detectable quantity of lead on membrane filter (AA grade) and cellulose filter (Whatman # 42) was found to be about 9 ug. The 3 methods of analysis, i, e., EDX, WDX, AAS were found to give the same result with .01 of significance level. Field tests in a battery factory shoued that the highest concentration of lead in air was 0.172 mg/m3 (8-hr average) when using the EDX method. While the values of 0.153 and 0.140 mg/m3 were determined by the AAS method using Perkin Elmer 4000 and Shimadzu AA 650 respectively.