SECTION E-2

INTER LABORATORY STANDARDIZATION OF ANALYTICAL METHODS FOR WATER QUALITY PARAMETERS

W.A.D. Wijesooriya and H.D. Gunawardena*
Central Environmental Authority, Colombo 10,
*Dept. of Chemistry, University of Colombo.

The importance of inter-laboratory and intra-laboratory standardization of analytical techniques has been emphasized by the chemists dealing with water analysis. The role of the analytical laboratory is to provide qualitative and quantitative data which will subsequently be used in decision making. Since the conclusions are drawn on the basis of the results produced by the analytical laboratory, the accuracy of the results play an important role

To achieve this objective, a project on Inter-laboratory Standardization of Analytical Methods of water was carried out during the years 1986/87. As a result of the exercise, the eleven laboratories participating in the programme have achieved an improvement in their respective laboratory performance.[1,2,3]. The second phase of the exercise was initiated in 1989 aqnd 2(laboratories consented to participate in the phase 11 of the programme.

A synthetic water sample containing seven parameters which conform to the Sri Lanka Standards for Effluents, was distributed by the CEA, among 20 laboratories. Only 11 laboratories responded within the stipulated period of time. The results reported by them for the analysis of cadmium, chromium, copper, lead, nickel, zinc and sodium adsorption ratio (SAR) were compared. The concentrations of cadmium, chromium, lead, and nickel generally agreed with the reference data for the synthetic water sample. However, the concentrations of copper and zinc and also SAR value showed a wide variation resulting in poor inter laboratory precision. Certain values reported for the latter parameters by some laboratories were rejected with 90% confidence to improve inter laboratory precision and accuracy.

Two synthetic water samples one containing chromium, lead, phosphate and nitrate (Sample 2A) and the other containing potassium hydrogen phthalate (Sample 2B) were distributed among the 20 laboratories. Only 11 laboratories responded. Concentration of lead reported by laboratories was in agreement with the synthetic sample. Whereas the results reported by some laboratories for the other parameters have been rejected with 90% confidence. By analyzing Sample 2B it was noted that the permanganate value (PV) cannot be precisely used as a substitute

for chemical Oxygen Demand. Further investigations on this is suggested.

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References: 1. Gunawardena H. Dasaratha, (1987) Proc.Sri Lanka Assoc. Advt. Sci, 42 176-177
2. Idem (1986) ibid, 43(1) 206.
3. Idem (1989) Chemistry in Sri Lanka 6 (1) 18-36.