REVERSE RADIOMETRIC FLOW INJECTION ANALYSIS (RFIA) OF RADIOACTIVE WASTE-WATERS WITH AN ASIA (ISMATEC) ANALYZER

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A new application of reverse radiometric flow injection analysis is described. RFIA was used for the analysis of radioactive waste-waters. ASIA (Ismatec) analyzer with NaI(Tl) scintillation detector was used in the study of analysis of $^{131}$I containing waste-water.

INTRODUCTION

In our previous paper, the principle of Reverse Radiometric Flow Injection Analysis was described. In RFIA the sample (radioactive waste-water) is used as the carrier, and water is injected into the following stream. As the water zone is transported through the system, the sample is diluted in it with increasing time and dispersion. Consequently, the sample concentration (activity) in the water zone may well be lower.
Fig. 1. RRFIA manifold. S - sample (radioactive waste-water), C - carrier (water), DET - detector of radioactivity, W - waste

than that in the sample zone of a normal FIA system. The design of such a system is shown in Fig. 1. The assumption when using this method is that this application is only practical when the amount of sample available is large, which is the case with radioactive waste-waters. We do not need reagent, only water for dilution of the radioactive sample.

EXPERIMENTAL

With ASIA (Ismatec, Switzerland) analyzer, radiometric detector and RRFIA technique we analyzed a radioactive waste-water sample containing $^{131}$I from the Nuclear Medicine Department of Yangon General Hospital. The measurements of radioactive analytes in radioactive waste-waters is more rapidly and safely carried out under automated conditions.

The ASIA analyzer, the radioactivity detection unit, the flow cell and the working procedure were described in Ref. (2). The total volume of analyzed radioactive ($^{131}$I) waste-water was 30 ml. The variopump (1.25 ml min$^{-1}$) was used for pumping the radioactive wastewater stream analyzed, fixpump (1.25 ml min$^{-1}$) for water.