J. Int. Environmental Application & Science, Vol. 4 (2): 207-213 (2009)

Determination of Cr(VI) in Environmental Samples Evaluating Cr(VI) Impact in a Contaminated Area

Pranvera Lazo*

University of Tirana, Faculty of Natural Sciences, Department of Chemistry, Tirana, Albania

Received April 15, 2009; Accepted June 10, 2009

Abstract: Spectrophotometric determination of Cr^{+6} (using 1.5–diphenyl carbazide), in aqueous, sediment and soil samples is reported. Different leaching reagents like 0.5M NaOH-0.28M Na_2CO_3 and 0.2 M H_3PO_4 were used for the isolation of Cr^{+6} from sediment and soil samples. Determination of Cr^6 by using 0.5M NaOH-0.28M Na_2CO_3 as leaching reagent followed by spectrophotometric measurements provided satisfied results. The optimum experimental parameters of the reactions have been studied and the validity of the described procedures was assessed. Statistical analysis of the results has been carried out revealing high accuracy and good precision. Total Cr concentration was analyzed by AASF technique. This paper explores the development and application of Cr^6 chemical speciation in a polluted area and marine environment. The polluted site of Porto Romano, Durres, pointed as "Hot Spot Pollution" from UNEP/MAP (1992) was under investigation. The content of Cr^{+6} in soil and surface water samples inside territory of polluted site is very high (some g/kg in soil samples and arrived up to 130 mg/l in surface water samples). More than 90% of Cr_{tot} belongs to its easy soluble form and only 2–10% of it belongs to the form bounded with soils. The content of Cr^{+6} in seawater (about 0.04 mg/l) and sediment (5-6 mg/kg as Cr_{tot}) samples resulted within the normal levels. Only 11 to 13% of Cr_{tot} belongs to its easy soluble form and most of it (87–89%) belongs to the form bounded with sediments.

Keywords: chromium, speciation, water, sediments and soils, UV-Vis spectrophotometry, AAS.

* *Corresponding: e-mail: vlazo@albmail.com; Tel: ++355 684057734; Fax: ++355 4 2232083*