ONLINE ISSN : 1348-2246
PRINT ISSN : 0910-6340

Analytical Sciences
Vol. 26 (2010) , No. 7 p.773

[PDF (628K)] [References]

Chemiluminescent ELISA for the BTEX Determination in Water and Soil

Elisabetta MAIOLINI[1)], Dietmar KNOPP[2)], Reinhard NIESSNER[2)], Sergei EREMIN[3)], Luca BOLELLI[1)], Elida Nora FERRI[1)] and Stefano GIROTTI[1)]

1) Dipartimento di Scienza dei Metalli, Elettrochimica e Tecniche Chimiche, Università di Bologna
2) Institute of Hydrochemistry and Chemical Balneology, Technische Universität München
3) Department of Chemical Enzymology, Faculty of Chemistry, M. V. Lomonosov Moscow State University

(Received March 4, 2010)
(Accepted May 7, 2010)

An indirect competitive chemiluminescence enzyme-linked immunosorbent assay (CL-ELISA) for the determination of benzene, toluene, ethylbenzene, and *ortho*-, *meta*-, *para*-xylenes (BTEX) in soil and water was developed. The assay was optimized concerning the coating conjugate concentration, anti-BTEX antiserum dilution, incubation time effect on primary and secondary antibody incubation, and temperature effect on the competitive step and tolerance to different organic solvents. The IC_{50} and lower limit of the detection (LDD_{90}) values were 4.6 and 0.5 μg mL^{-1}, respectively. While water samples could be analyzed directly, soil has to be extracted and diluted prior to immunochemical measurements. BTEX could be recovered from spiked soil with a yield higher than 60% using 5-min ultrasonication with methanol. Finally, the assay was applied to soil and water samples collected at a contaminated site in Italy, and was compared to GC-MS.

[PDF (628K)] [References]

Download Meta of Article[Help]

doi:10.2116/analsci.26.773

JOI JST.JSTAGE/analsci/26.773