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ANALYSIS OF WATER SAMPLES BY LIQUID CHROMATOGRAPHY-MASS SPECTROMETRY

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Historically the Capillary Gas Chromatography techniques (GC), such as Gas Chromatography-Mass Spectrometry (GC-MS), have been the most popular analytical technique for the analysis of environmental pollutants. A range of new contaminants and environmental issues that are driving most of the current environmental research have emerged in the past five years [1-11]. Some of these newly identified contaminants include endocrine disrupting compounds (EDCs), pharmaceuticals, perfluorinated surfactants and antibiotics. Many of these emerging environmental contaminants are not amenable to analysis by GC as a result of their thermal instability, high polarity and/or lack of volatility. To produce more volatile products, some analytes require derivatisation. The additional step/s to enable GC analysis can often be time consuming. More recently Liquid Chromatography coupled to Mass Spectrometry (LC-MS) has become a prime candidate for the analysis of these emerging environmental pollutants. The advent of the robust atmospheric pressure chemical ionisation (APCI) and more efficient electrospray ionisation (EI) sources and sensitivity has led to an increasing number of LC-MS applications. With the use of continuous-infusion experiments on the LC-MS, detection parameters can be optimised for each target analytes and can lead to rapid development of new analytical methods. Several LC-MS methods are presented for the analysis of previously difficult analytes. The instrument employed for the analysis is an Agilent Technologies (Palo Alto, CA) Liquid Chromatograph-quadrupole Mass Spectrometer SL and the XCT Plus ion trap with both electrospray (EI) and atmospheric pressure chemical ionisation (APCI) sources. LC-MS provides a means of assessing the impact and fate of many of these emerging compounds.