ELECTRONIC SUPPLEMENTARY INFORMATION – B905139B

25 Years Experience of Vapour Generation Techniques for Quantifying Trace Levels of Mercury, Arsenic, Selenium and Antimony in a Range of Environmental Samples

Based on a lecture entitled 25 Years Experience of Vapour Generation Techniques for Quantifying Mercury Levels in a Range of Environmental Samples, presented in 14th BNASS, Sussex, UK, 2008

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Experience with other vapour generation techniques has guided P S Analytical (PSA) in the development of systems that measure mercury in a wide range of products.

In parallel with the original equipment manufactured system (OEM) PSA had developed a fully automated vapour generator (figure A) and had linked this with a number of commercially available AAS, ICPS and direct coupled plasma (DCP) designing the interfaces for all of these to fit the individual instruments and wherever possible providing some links through hardware to the data processing side of these instruments to fully automate the procedure. These were supplied to many customers worldwide often directly through the instrument companies themselves.

Figure A PSA 10.002 Hydride Generator

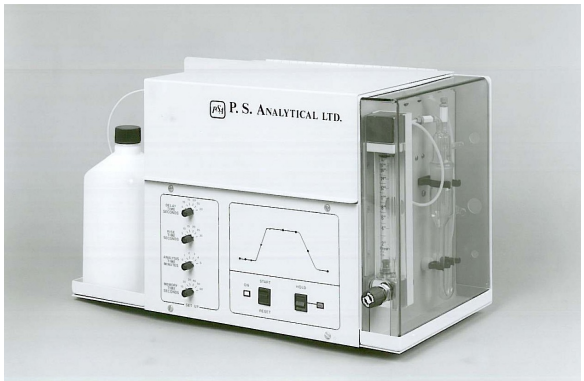

Table A shows an illustration of the significant improvements using the vapour generation technique over a direct nebulisation of the sample.†

A fully automated atomic fluorescence system for mercury analysis is shown in figure B; this comprises both the vapour generation and the mercury determination system. This instrumentation is able to conform to the accepted standard methods of ISO, CEN and the United States Environmental Protection Agency (EPA). This will provide detection levels from 0.1ppt and has a large linear dynamic range through to 1000 ppm, Corns et al*. have described mechanisms of extending the linear dynamic range and also allowing the system to cater for difficult matrix interference effects.

Figure B PSA 10.025 Millennium Merlin with Autosampler

† *Comparison of Detection Levels for Normal Nebulisation and Vapour Generation on Plasma 2 ICP Spectrometer as detailed in Table 6 of the full article where obtained using a PSA 10.003 Hydride Generator.*

* Corns, W. T., Ebdon, L. C. and Hill, S. J., Journal of Automatic Chemistry, 1991, 13, 6, 267-271