

ANNEX 1 - CHEMICAL ANALYSIS

As discussed in a recent report of the Technical Instrumentation Group (CD/CW/WP,306), it is anticipated that the sample preparation and analysis of samples in this type of inspection under the CWC will normally be conducted on-site, using equipment brought to the inspection site by the inspection team.

MRL has purchased a small Gas Chromatograph-Mass Spectrometer (GC-MS) system, that is to be installed in a vehicle, to enable on-site analysis of inspection samples. As the GC-MS has not yet been vehicle-mounted, the samples were taken from the inspected facility to MRL for analysis.

The analysis of the samples by GC-MS was undertaken using the approach described in CD/CW/WP.353, namely, the GC-MS was used as a rapid screening technique to indicate the presence of Scheduled chemicals, and provided no information on chemicals that are not relevant to the CWC.

Prior to analysis, a 1.0 ml aliquot of each liquid sample was extracted with 1.0 ml of HPLC grade dichloromethane. This extract was dried by passing it through a small column of anhydrous Na_2SO_4 , and a 1.0 microlitre splitless injection of this solution was used for GC-MS analysis. A 25m 0.33mm I.D. BP5 capillary column, temperature programmed from 50° to 250°C/min, was used for the analysis. Tenax air samples were analysed by thermal desorption-GC-MS using similar GC conditions.

The mass spectrum corresponding to each GC peak was compared with a library of mass spectra of Scheduled chemicals to determine the presence or absence of Scheduled chemicals, using the approach outlined in CD/CW/WP.353. No undeclared Scheduled Chemicals were detected in any of the samples obtained during the inspection.

Had this been a normal trial inspection, no further analysis of samples would have been performed. However, as part of the Workshop, additional laboratory analysis of the samples was undertaken as a demonstration of other relevant techniques. Analysis of samples by Infrared (IR) and Nuclear Magnetic Resonance (NMR) Spectroscopy was performed, again, to check for the presence or absence of Scheduled chemicals. The workshop participants noted that this additional analysis would not normally be undertaken unless there was an ambiguity, for example, in the GC-MS results.