PT1 Fast LCMS of Chemical Warfare Agents and Related Hydrolysis Products

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Fast LCMS has decreased the analysis time for analysis of chemical warfare agents (CWAs), related hydrolysis products and by-products.

As part of the ongoing research and development programme at DSTO we have trialled new hardware to decrease the analysis time for LCMS of small organic molecules. During the testing and evaluation phase of the programme we have evaluated several different HPLC columns from different manufacturers to determine their characteristics.

The advantage over traditional methods of analysis are that the LCMS takes less time to perform than GCMS, it can analyse for all compounds of interest with the exception of some sulphur-related compounds and sample preparation is minimal and compatible with the NMR and GCMS experiments.

In this presentation we show the results from the evaluation of the columns. The column evaluation test mix contains molecules of interest to Defence and the Organisation for the Prohibition of Chemical Weapons (OPCW). This, in conjunction with a ^{31}P-^{1}H correlated NMR experiment provides a rapid and robust analysis, complementary to GCMS. At least two complimentary analyses of samples is a requirement for unambiguous identification by the OPCW.