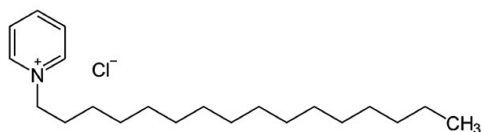
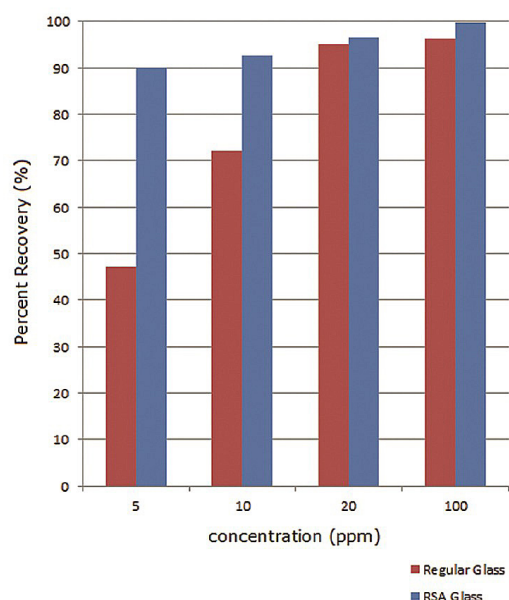


Concentration-Dependent Vial Adsorption Studies

Comparison to conventional glass



Cetylpyridinium chloride



Notes: Concentration studies are important to any laboratory that deals with trace-level compounds. Advances in analytical detection technology can now observe lower levels than ever before, but this capability is useless if the analyte is lost to adsorption with the autosampler vial before it even enters the instrument.

Method Conditions

Item: RSA™, glass vials and AQR caps

Column: Cogent Diamond Hydride™, 4µm, 100Å

Catalog No.: 70000-7.5P (column)
9509S-1WCP-RS (Easy Purchase Pack RSA vials & AQR caps)

Specifications: Reduced Surface Activity Glass, clear, 2ml, write on, screw top vials and AQR non-slit caps

Mobile Phase: 50% DI H₂O/ 50% acetonitrile/ 0.1% formic acid

Flow rate: 1.0 mL/min

Sample: 5.0–100 ppm cetylpyridinium chloride reference standards in DI H₂O diluent. Portions of the same samples were transferred to the two vial types and injected into an HPLC initially and after four hours. Peak areas were recorded and compared to initial injections to calculate percent recovery.

Discussion

In this study, the importance of concentration is demonstrated when dealing with analyses of basic solutes. Using conventional glass of an industry-leading supplier, the basic test analyte cetylpyridinium chloride showed notable loss to adsorption with the vial at the lower concentrations. If this trend continues to even lower concentrations, the analyte may not even be detected at all. This could have serious implications for analyses that depend on the presence or absence of a given compound, such as pharmaceutical stability testing assays. On the other hand, recovery using RSA Glass remained above 90% under the conditions studied.