

Serum PFC Testing

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Haven Well Contamination
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Serum PFC Testing

- Methodology
- Sensitivity
- Specificity
- Quality Management
- Reporting
- Limitations of the Data

Methodology

- Liquid Extraction
- Solid-Phase Extraction
- High Pressure Liquid Chromatography Tandem Mass Spectrometry (HPLC/MS/MS)
 - Separation
 - Identification
 - Quantification



- Neutral molecules enter the MS at low pressure
- Analyte is bombarded with electrons
- High energy electrons close to the molecule cause it to lose an electron
- Formation of the radical cation and fragments
- Positively charged ions are repelled from the source into the mass analyzer
- Electric fields cause them to enter one at a time
- Scanned and mass to charge ratio measured

LC/MS/MS

- Triple quadrupole
 - Q1 – isolation of precursor ions
 - Q2 – collision induced dissociation
 - Q3 – mass filtering of product ions
- Highly selective
- Very sensitive

Sensitivity of LC/MS/MS

- Analyte specific
- Calculated by replicates of low standards
- Standard deviation at zero concentration (blank)

Specificity of LC/MS/MS

- Retention time
- Precursor ions with a specific mass/charge ratio
- Specific product ions formed from the precursor ion, with specific mass/charge ratios

Quality Management System

- Requisite experience
- Plan for continuous quality monitoring
- Procedure for identifying & correcting problems
- Proficiency testing
- External certification or accreditation

Reporting of Participant Results

- Individual test results
 - National Exposure report
 - Schecter study
- Northern New England Poison Center
- Portsmouth Community Results

Limitations of the Data

- No “normal ranges”
- No established health effect levels
- Cannot conclude impact of measured levels on individual health
- Compare results to national averages or selected studies