**Summary**

PFAAs background is found everywhere in the laboratory supplies and equipment such as LC solvent lines, polytetrafluoroethylene (PTFE) product, glassware, vials, aluminum foil, etc. PFAAs background causes peak tailing problems, effect the % recovery for QC at MRL level, and place great impact in the results of the following compounds - PFOA, PFNA and PFHpA.

To overcome this problem the Orange County Water District (OCWD) Lab has modified the LC set up to separate the PFAAs background from the target compounds. This simple modification proves to be highly effective for meeting the QC requirements of the Unregulated Contaminant Monitoring Rule 3 (UCMR3) EPA Method 537.

**Method Development Challenges**

- If the stock standard concentrations between 2 vendors do not match, need a 3rd vendor to confirm the standard concentration
- Make working standards fresh every month to avoid compound breakdown problem (PFNA, PFHpA & PFOA)
- Each sample takes minimum 45 minutes to 1.5 hour to concentrate the sample to dryness
- Peak tailing between injection port and analytical column needed to be changed regularly

**Advantages**

- Separation of Background from Target Compounds
- Sharper peak and no peak tailing
- Eliminate False Positive for Result Concentration at MRL Level
- Accurate % Recovery for QC at MRL Level

**Disadvantages**

- Additional cost of 2nd analytical column
- Additional Pressure to the LC system ~1000 psi
  - Conventional LC Setting Pressure ~ 3500 psi
  - Modified LC Setting Pressure ~ 4500 psi

**Conclusion**

Through simple LC modification, we separate the background from PFOA, PFNA and PFHpA during the analysis; improve the QC %recovery and meet all the criteria required by UCMR3 EPA method 537.

**QA/QC**

Sample preparation, extraction:
- GC requires for each batch of samples (1:10)
  1. Method Blank (blank before - 0B)
  2. Lab Final Blank (LFB)
  3. LOD/LOQ - mid point concentration of calibration curves
  4. Sample duplicates, matrix spike & spike out
  5. Internal Standard

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