FMS
Fluid Management Systems

EPA 625: Base, Neutral, Acid Semi-volatiles in Municipal and Industrial Waste Water by Solid Phase Extraction

Overview

- Development of a fully automated extraction system for EPA 8270/625
- Establishment of an extraction procedure capable of implementation of various aqueous matrices
- Participation in ILI SPE Demonstration project for method suitability
- Implementation of platform across other EPA methodologies

Matrices

- DI and Tap
- ASTM 5909 synthetic Waste Water
- TCLP Fluid
- Pond, River and Reservoir surface water
- Real world industrial effluents and influents
- Groundwater

SPE Waste Water Study Participation

- Participated in both Phase I and II
- Submitted data for all matrices in each respective study
- 3rd Party participation using FMS equipment

FMS TurboTrace ABN

FMS, Inc. SuperVap w/ direct to GC vial

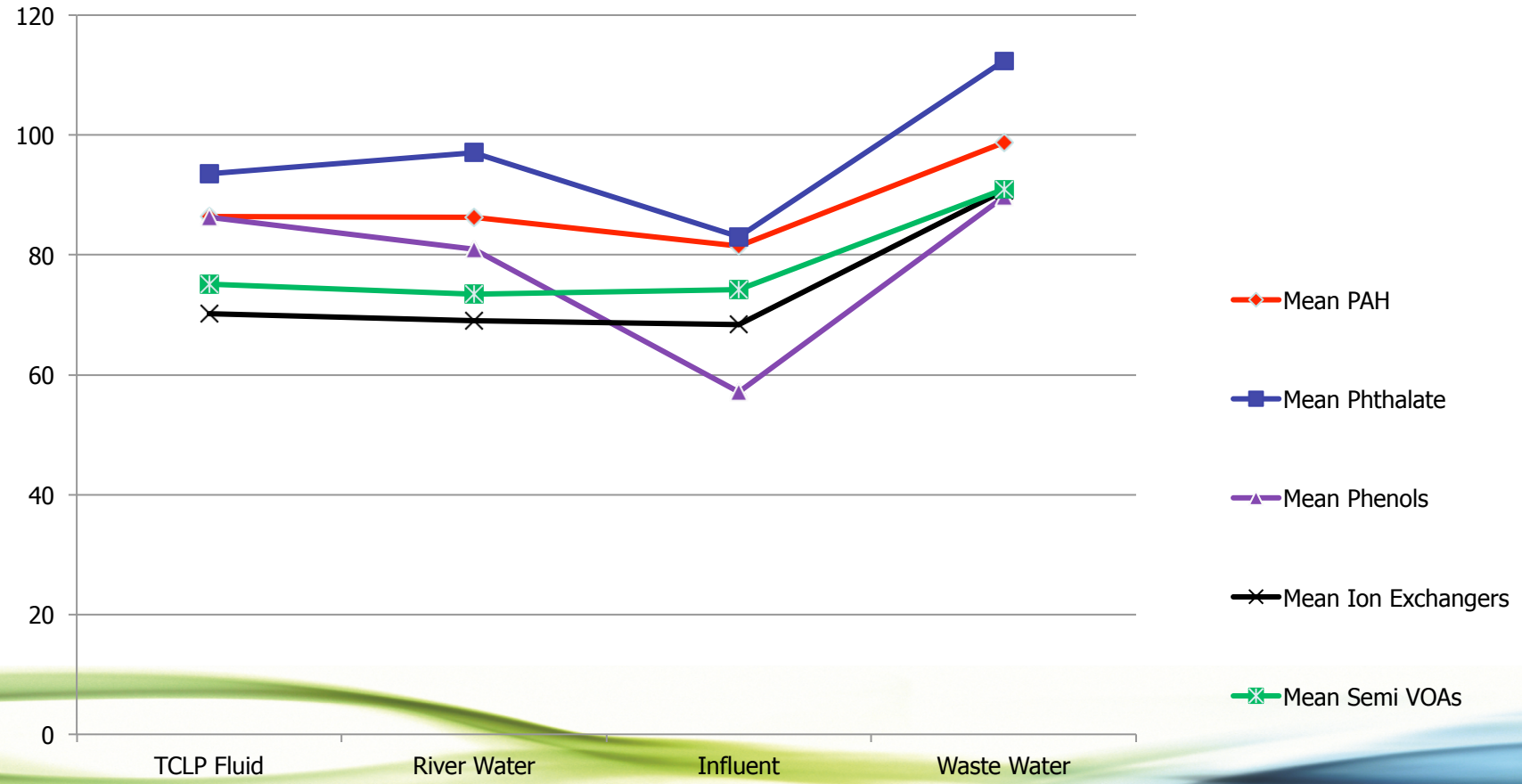
SuperVap Features

- 6 (250ml) and 12 (50ml) position models for extractions.
- Dry bath heating element
- Independent secondary heater for extract nipple (Can be disabled).
- Sensor controlled
- Savable temperature log capability.

EPA 625/8270 Procedure

- Fully automates all processes, not manual steps
- Capable of delivering up to to 3 independent fractions (or combine as 1)
- Can elute direct to FMS Super Vap evaporator
- Automated organic solvent rinse of sample bottle
- Can elute either cartridge independently or in parallel
- Modular and Expandable
- Direct to GC Vial extracts

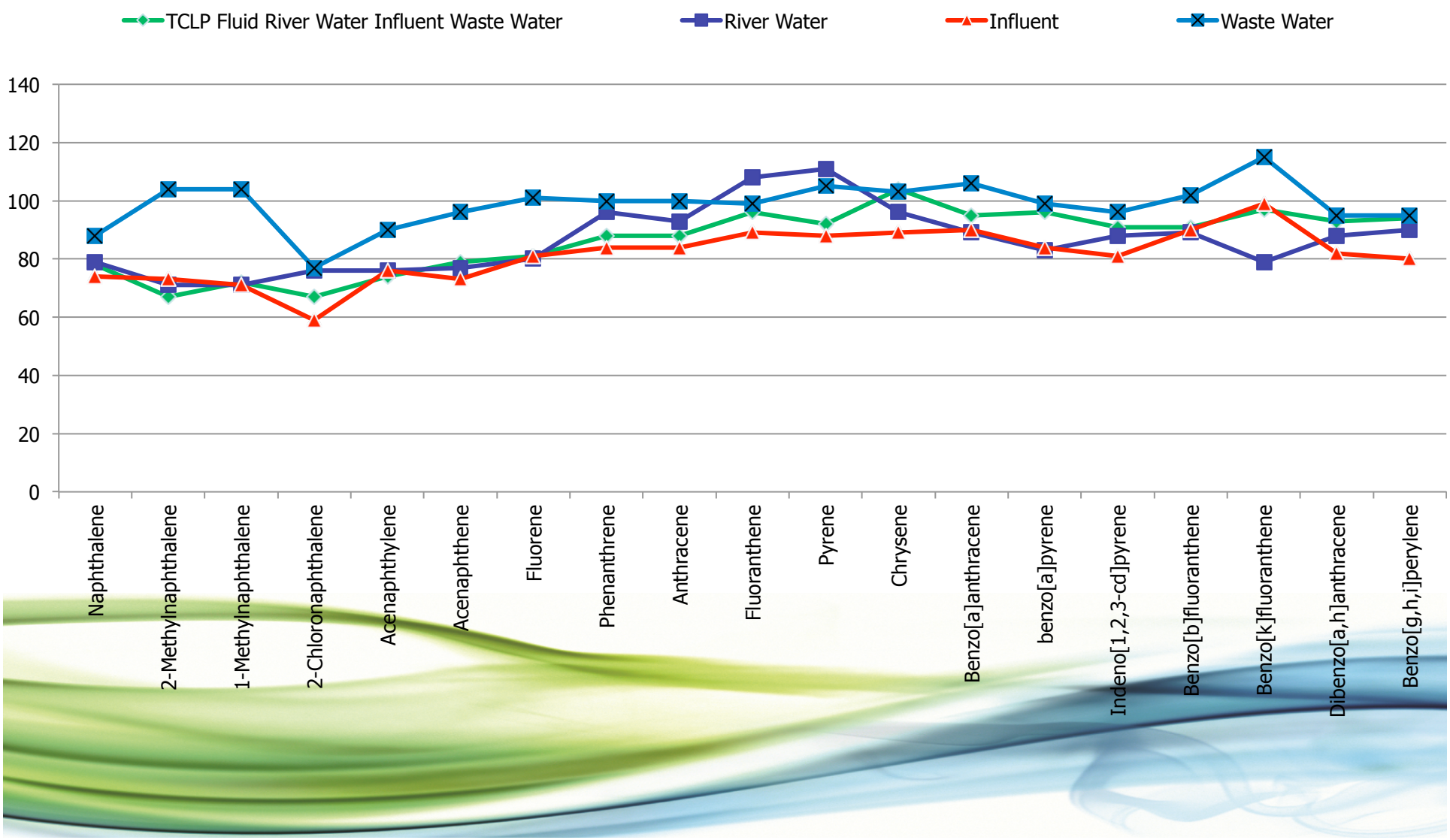
Recoveries by Analyte Class



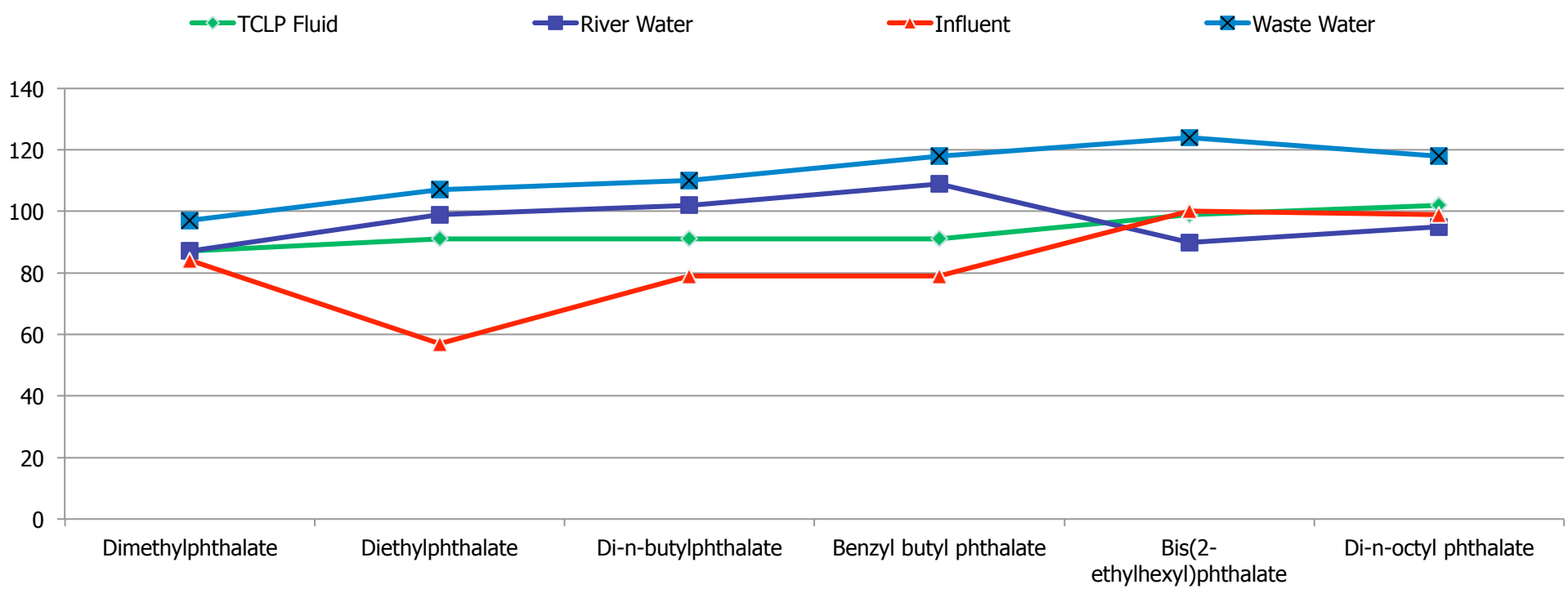
Data

Recoveries for Individual Compounds with specific Analyte Classes

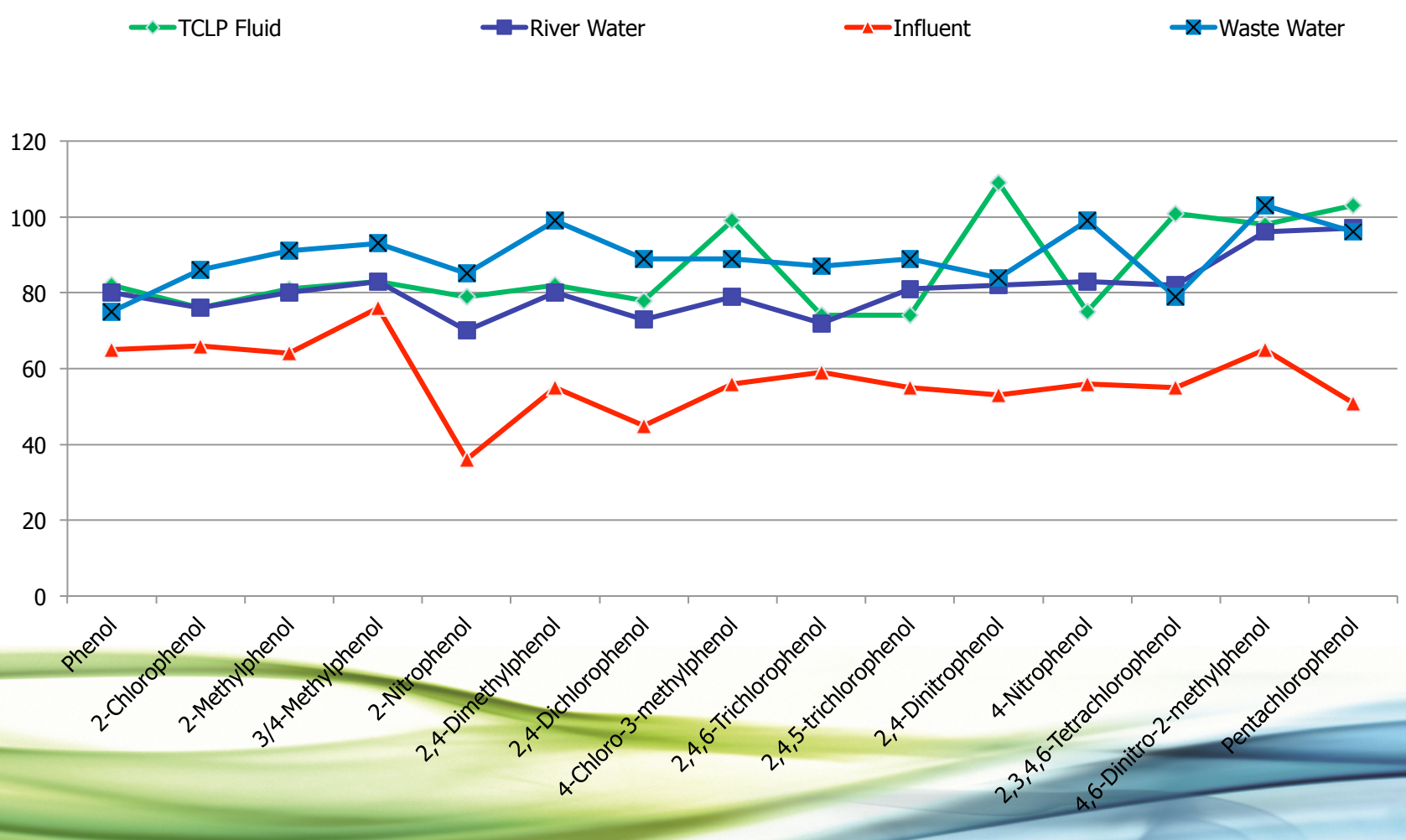
PAHs


TCLP Fluid River Water Influent Waste Water
River Water
Influent
Waste Water
140
120
100
80
60
40
20
0
Naphthalene
2-Methylnaphthalene
1-Methylnaphthalene
2-Chloronaphthalene
Acenaphthylene
Acenaphthene
Fluorene
Phenanthrene
Anthracene
Fluoranthene
Pyrene
Chrysene
Benzo[a]anthracene
benzo[a]pyrene
Indeno[1,2,3-cd]pyrene
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Dibenzo[a,h]anthracene
Benzo[g,h,i]perylene

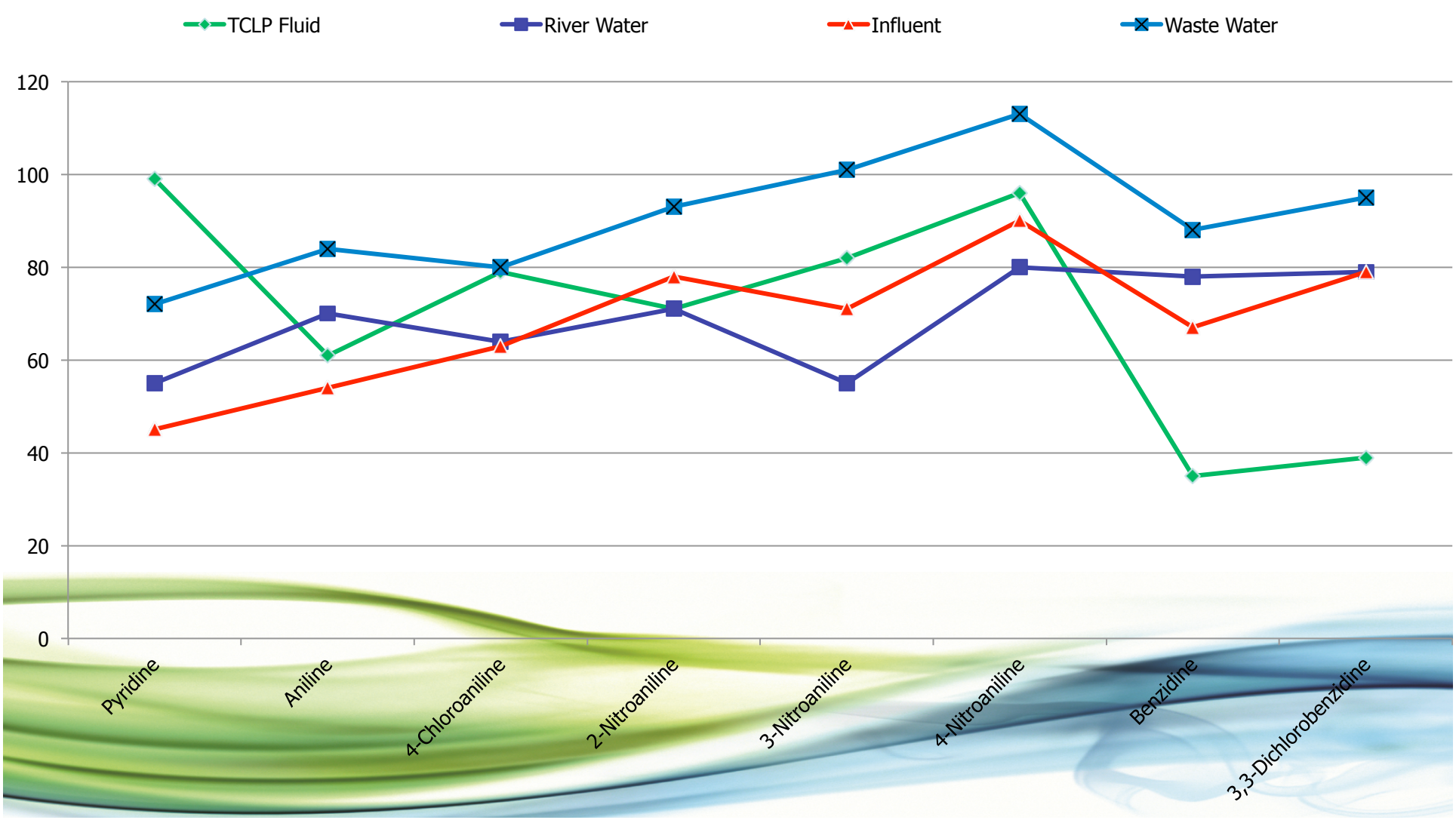
Phthalates


TCLP Fluid
River Water
Influent
Waste Water
140
120
100
80
60
40
20
0
Dimethylphthalate
Diethylphthalate
Di-n-butylphthalate
Benzyl butyl phthalate
Bis(2-ethylhexyl)phthalate
Di-n-octyl phthalate

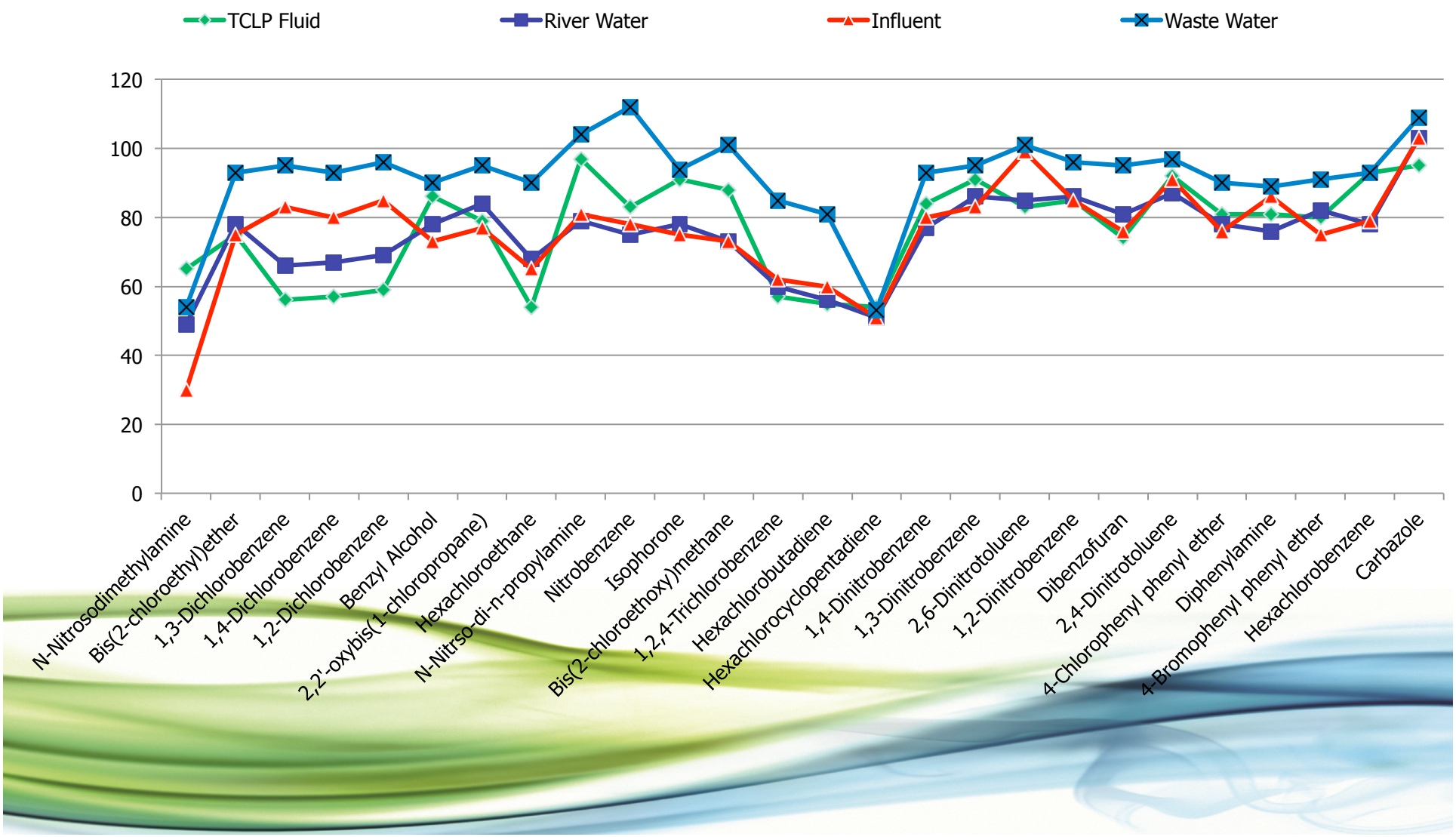
Phenols


TCLP Fluid
River Water
Influent
Waste Water
120
100
80
60
40
20
0
Phenol
2-Chlorophenol
2-Methylphenol
3/4-Methylphenol
2-Nitrophenol
2,4-Dimethylphenol
2,4-Dichlorophenol
4-Chloro-3-methylphenol
2,4,6-Trichlorophenol
2,4,5-trichlorophenol
2,4-Dinitrophenol
4-Nitrophenol
2,3,4,6-Tetrachlorophenol
4,6-Dinitro-2-methylphenol
Pentachlorophenol

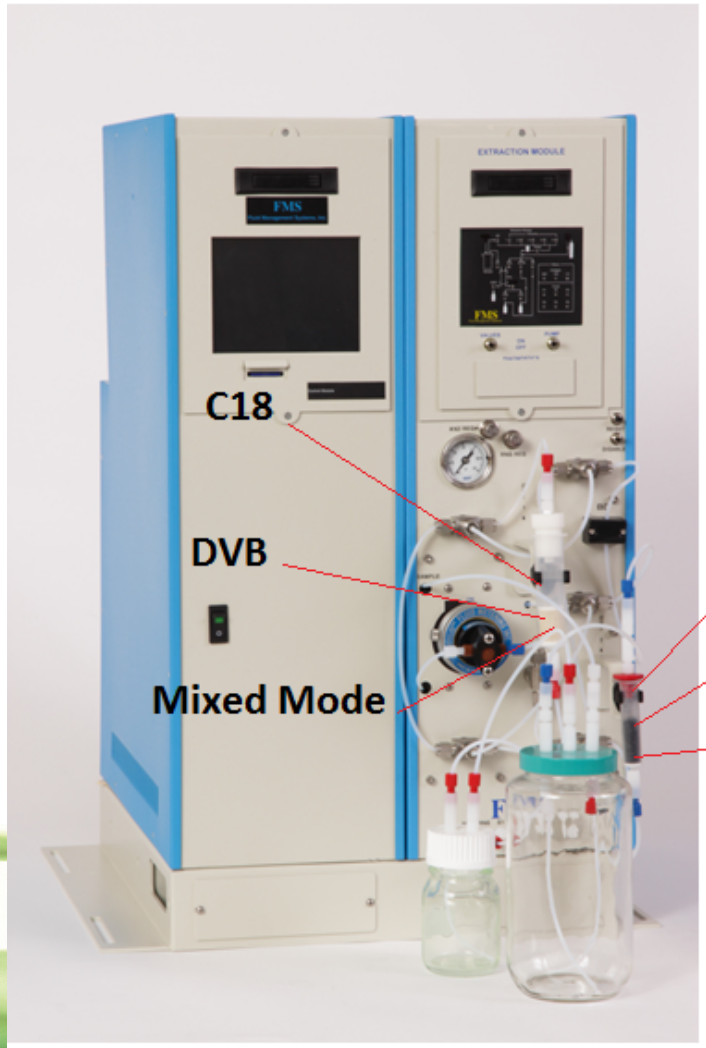
Ion Exchangers



Semi-Volatiles



Expanded Methodology



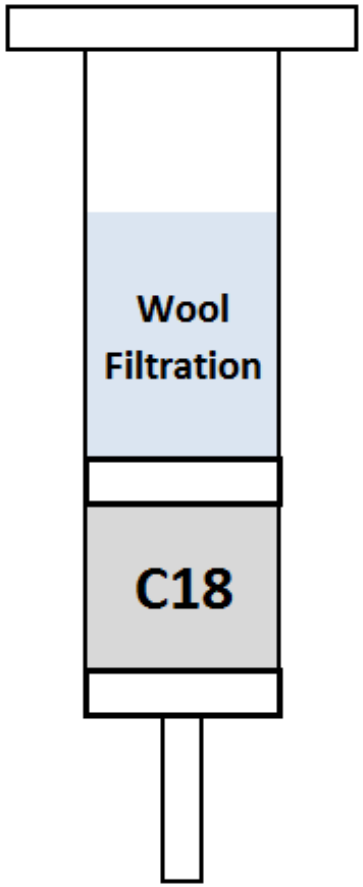
EPA Methods (examples)

- EPA 8082
- EPA 8081
- EPA 1694
- EPA 1664
- EPA 1613
- EPA 8151
- EPA 1614
- EPA 8310
- EPA 8290
- EPA 8330
- EPA 8141

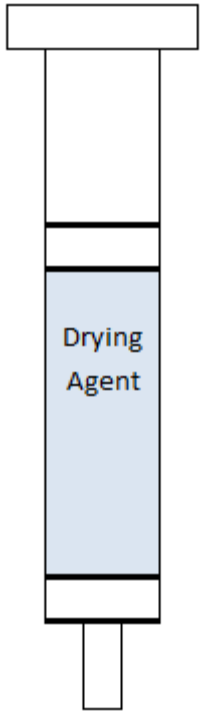
- Any EPA 500 series SPE method

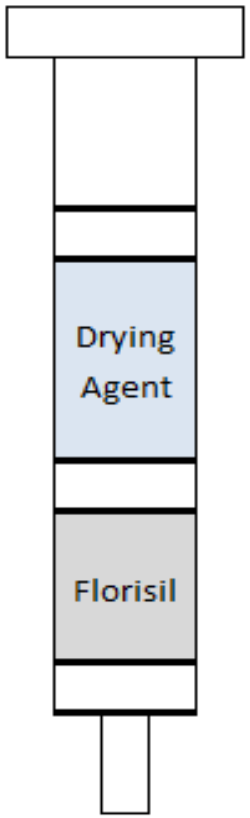
Examples

Extraction Cartridge



Clean-up Cartridge





Summation

- Fully Automated 625/8270 extractions
- Expandable to meet any SPE method
- Capable of performing in line extract drying and/or Cartridge extract clean-ups
- In-line evaporation with direct to GC vial tubes.

FMS
Fluid Management Systems

Questions?