

QA in the PM2.5
Chemical Speciation
Network and the National
Air Toxics

Trends

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Why an Intercomparison

- The Chemical Speciation Network (CSN) and the National Air Toxics Trends Station (NATTS)
- Share one common set of pollutants
 - Toxic Metals
- Intercomparability a major issue
- New Lead NAAQS
- Different methods: i.e., XRF vs. ICP-MS



Why an Intercomparison

- For CSN, EPA-NAREL annually creates
 - Mega PE study
 - Metals, Anions/Cations, EC/OC
 - For NATTS, Alion semi-annually creates
 - Metals on Quartz
 - VOCs in Canisters
 - PAHs on PUF
 - Carbonyls on DNPH
 - Chromium +6*
- * In the works



Why an Intercomparison

- In 2007, we commissioned Alion to create:
 - Two identical sets of metals samples
 - Same batch and concentration
 - Neither sets of labs knew – Single Blind
 - XRF were created on Teflon
 - ICP-MS were created on Quartz
- We received the final data in Nov 2008

List of Test Compounds

- Compounds that are in common to both networks:

Arsenic (As)

Mercury (Hg)

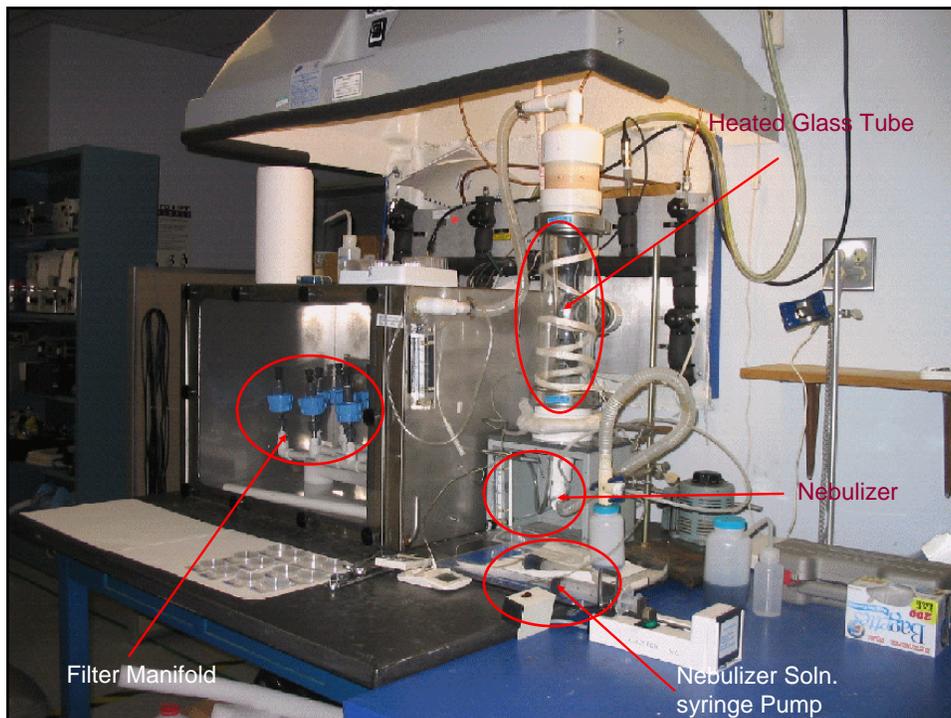
Cadmium (Cd)

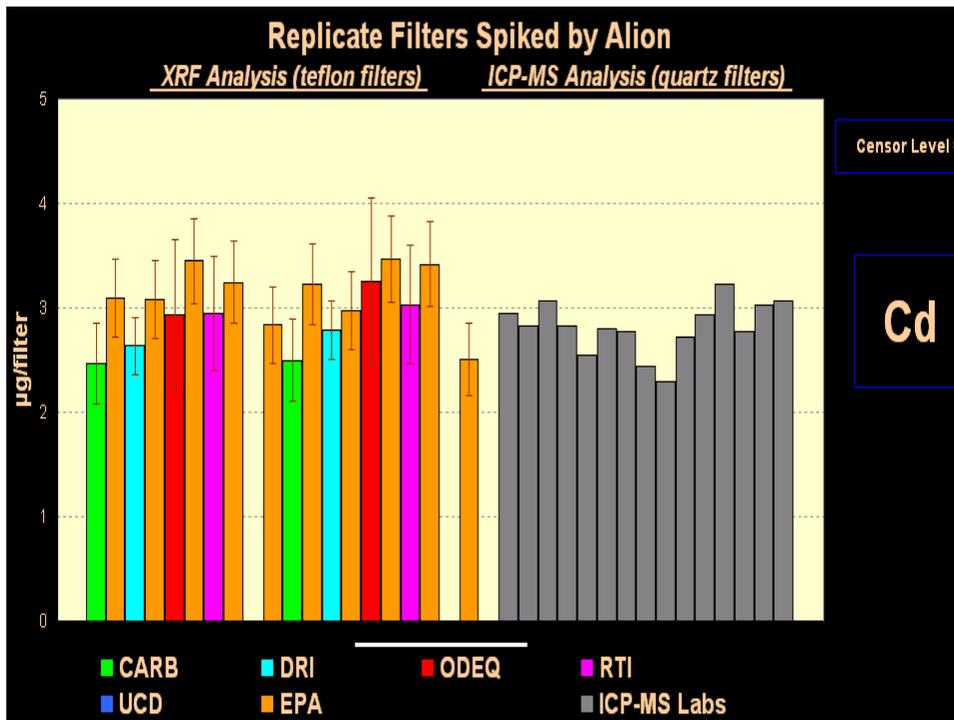
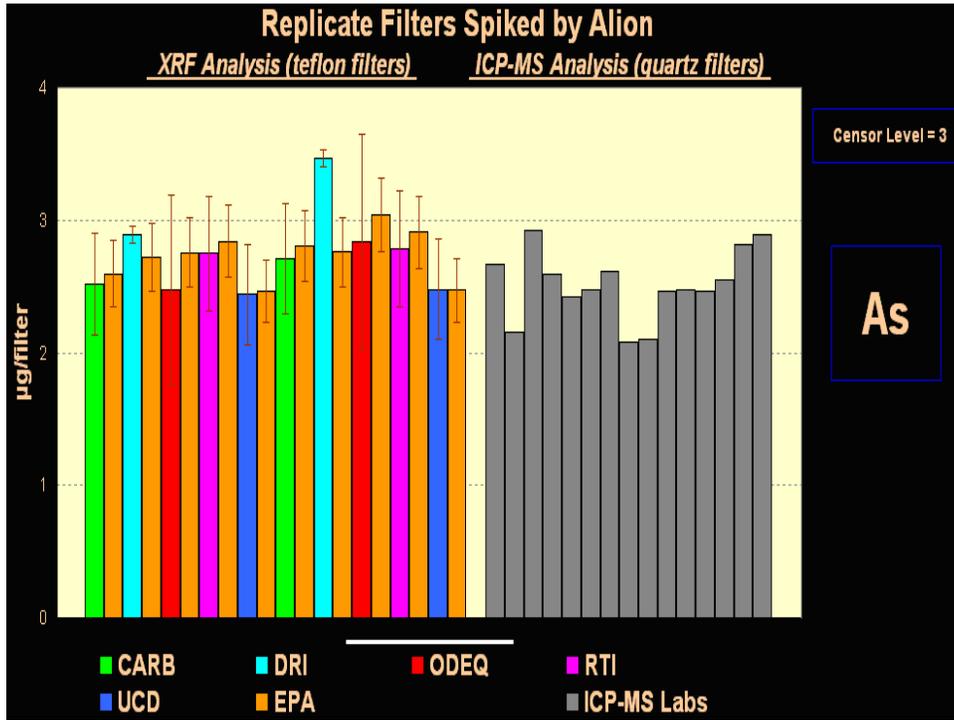
Nickel (Ni)

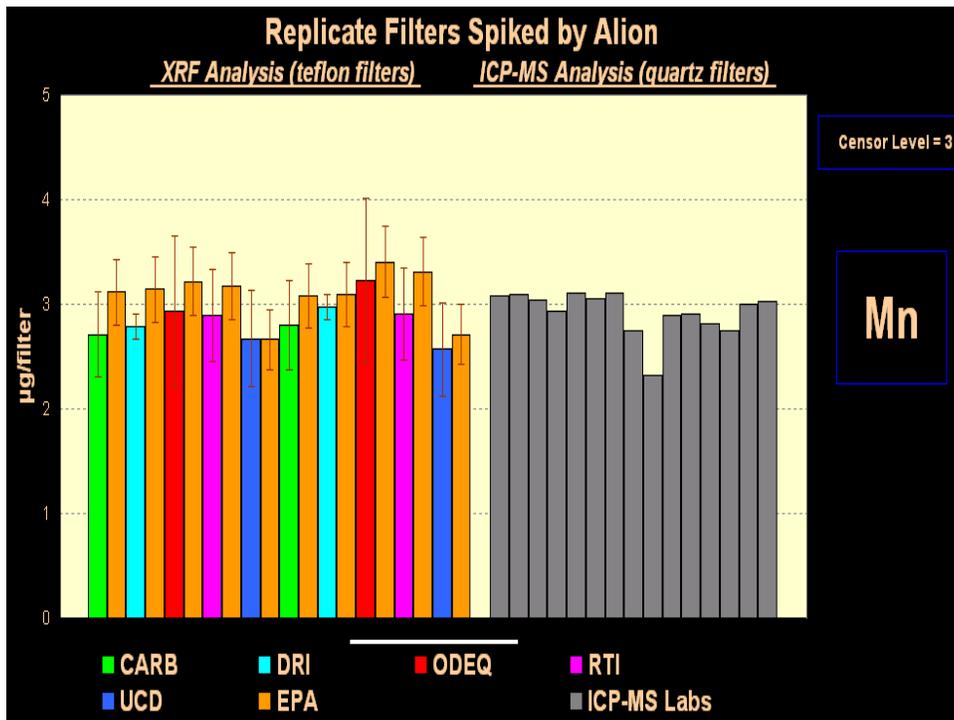
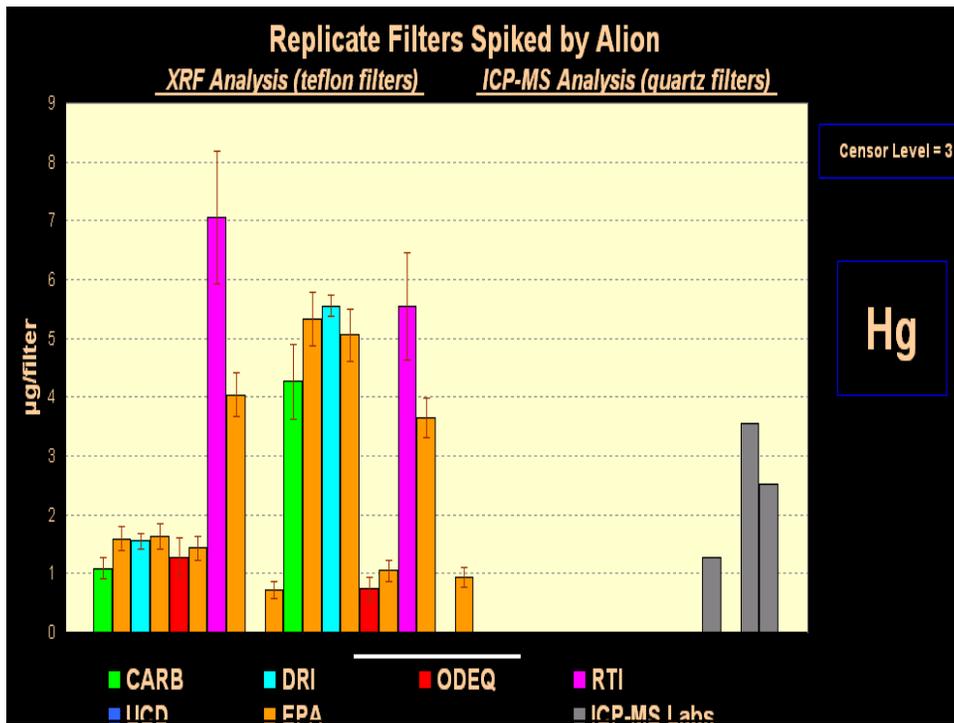
Manganese (Mn)

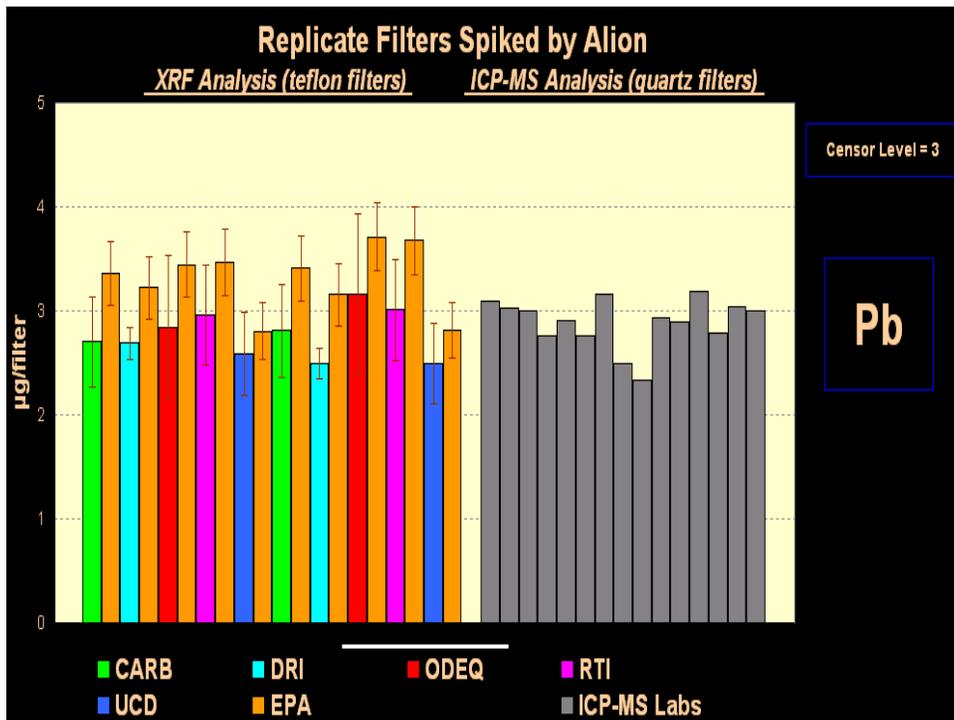
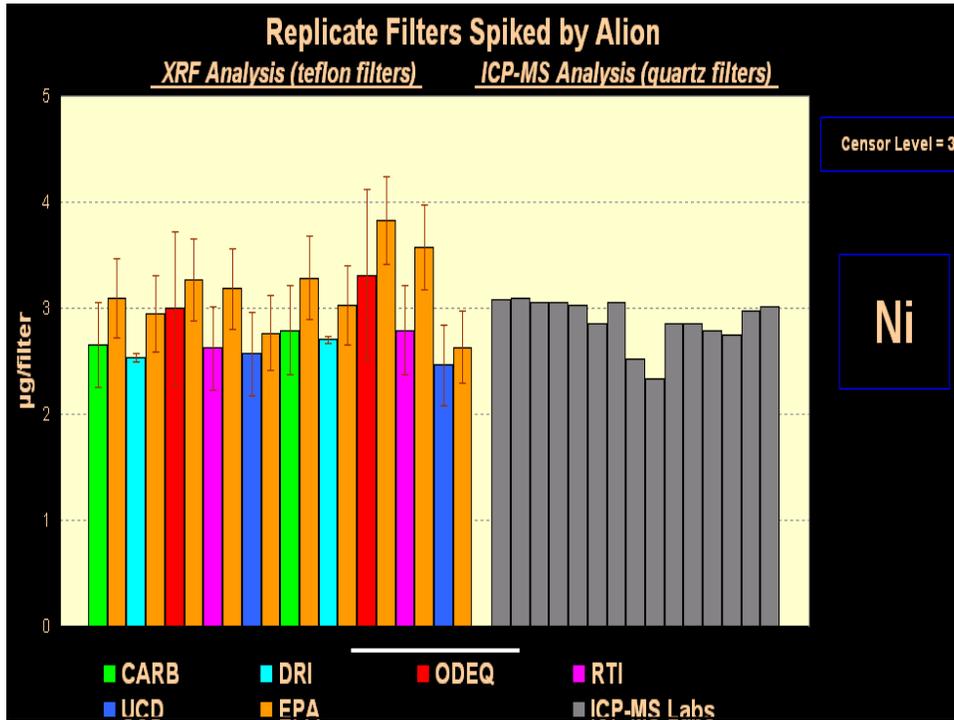
Lead (Pb)

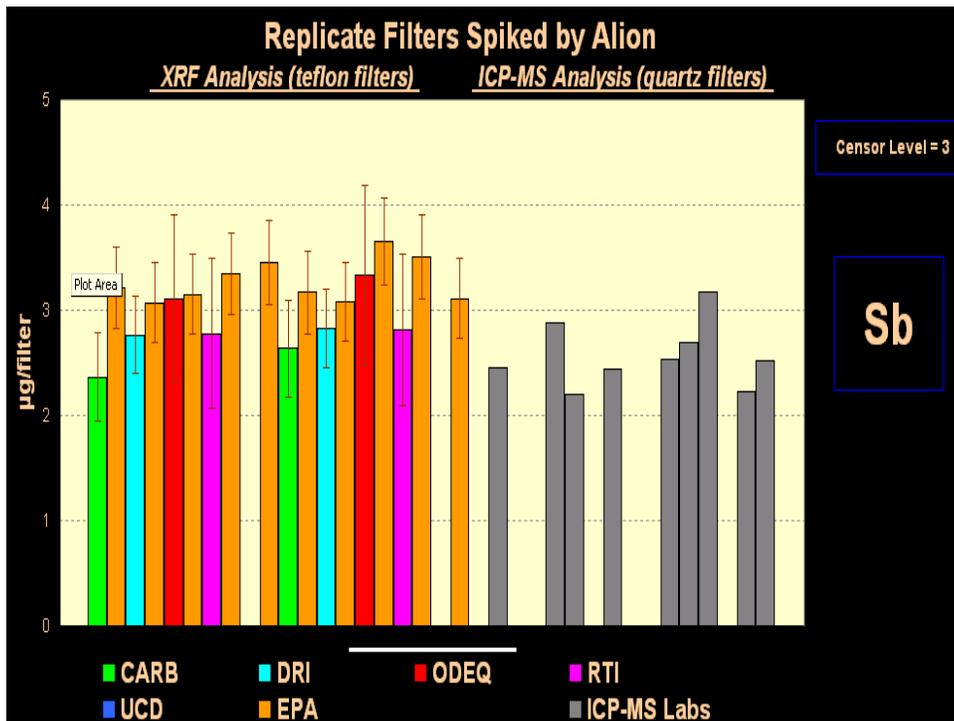
Antimony (Sb)











Questions We Have

- Is there a Statistical Difference between the ICP-MS and XRF in by batch or by filter?
- Are there any clues to be noted about bias of instruments or XRF procedures?
- Can the quantification of each analyte deposited on the filter be improved?
- Can we improve our understanding of the uncertainty of the blind standards?
- Others?



Future Work?

- The results (notwithstanding our questions) show excellent intercomparison between networks
- So, should we:
 - Continue this in the future?
 - If we do, how do we do this?
 - Use the Mega PE (annual) or more frequent
 - Should we expand the list?



Other QA Needs

- Are there specific new or different QA work products that would be useful for--
 - Toxics Monitoring Data Users?
 - Chemical Speciation Data Users?
- Do you know about the impending mechanism to report flow rate audits and operator verifications of speciation samplers to AQS