

# Pb in Drinking Water: Lessons Learned

By

Jason Dahl

City of Portland Oregon

+10,000 Samples in 3 months

- 5,000 Public building samples (Schools, Parks, Recreational facilities)
- 5,000 Private home samples



## Supplies needed for the job

- Bottles- Check with vendors to make sure you have access to enough
- Boxes- Enough for sending out Sampling Kits to home owners
- Test Tube Racks- For holding prepared samples for analysis and after analysis
- pH test paper- For testing preserved samples
- HNO<sub>3</sub> acid- For preserving and preparing samples
- Hot Block Digestion Tubes- For analysis of samples >1 NTU

# Public Building Sampling

The City did not have enough properly trained staff on hand to gather 5,000 + samples in a 2 month window.

The sampling was **contracted out** to a private firm that brought staff on board and trained them to do the sampling. Directed samples to the City laboratory as well as to outside certified labs.

They were giving a list of buildings and facilities that needed testing and they set-up the sampling schedule and protocols needed



# Private Home Sampling

The City hired 2 Temporary staff to handle customer inquiries, take customer information, send out sampling kits as well as receive customer sampling kits

Consider automation- A link on the City web site where customers could find information, fill out a request for a sampling kit (which could be linked to a LIMS data base) and or a phone # which customers could call and a voice recognition system could take their information.

Create a “youtube” video of how to sample for the home test kit. Voice over in multiple languages

Typically in the City saw a 20-30% return rate of sampling kits, But during the media attention that return rate rose to 70-80%.

# Bottle Necks in the Process

- Sample Receiving – Entering info into the LIMS system. Labeling. pH preserving of samples.
- Next day pH check and Turbidity testing - At 2.5 -3 minutes a sample. 160 samples with QAQC is an 8 hour day. 10,000 samples represents 60 man-hour days alone just for Turbidity.
- Samples with  $> 1$  NTU- Those samples require a Hot Block digestion (a 3-4 hour digestion). 1 Hot block can push through 50 samples a day. Typically 3-5% of home samples have a  $>1$  NTU. But when testing the school samples which had sat idle for a month about 20-25% had  $>1$  NTU.



## Don't just analyze for Lead (Pb)

- Typically ICP-MS is the instrument of choice for analyzing for low level Pb in Drinking Water.
- Also monitor for Copper, Zinc and Chromium at a minimum.
- Typically the instrument data dump into the LIMS will included all masses monitored and the LIMS will pull out what is required. This allows for the retrieving of other element data out the data file at a later date without having to re-analyze the sample.



Thank you

Jason Dahl

City of Portland Oregon

[jason.dahl@portlandoregon.gov](mailto:jason.dahl@portlandoregon.gov)