KENTUCKY LEAD WORKING GROUP

DISTRIBUTION / PIPING SUBGROUP PRESENTATION OVERVIEW

- Distribution System Piping Materials
- Lead by Piping Materials
- Soven - Lead and Copper Rule Impact on Piping Materials
- System Installation
- Getting the Lead Out

DISTRIBUTION SYSTEM MATERIALS IN USE THROUGHOUT MODERN HISTORY

- Wood
- Lead
- Cast Iron - Ductile Iron - Rigid Iron - Mechanical Joint
- Asbestos Cement - PVC - Hard Plastic - Rigid Polyethylene
- PVC - CPVC - Cured - Glued
- HEV - PVC - Mechanical Joint
- Steel - Welded
- Stainless Steel
- Copper
- Brass
- Concrete

LEAD JOINT CAST IRON PIPE

WHY WAS LEAD PIPE USED?

- Flexible
- Durable
- Easy to work with
- Not subject to pinhole leaks
- Plumbers protecting their jobs

REGULATION OF LEAD IN PLUMBING

- 1996 - Congress passed the Safe Drinking Water Act - Prohibited the use of pipe, solder or flux that was not "lead free" in plumbing of facilities for human consumption. Lead free was no more than 8% lead in pipe and 0.2% in solder or flux.
- 1988 - Congress passed the Safe Drinking Water Act - Required plumbing fittings and fixtures to be in compliance with voluntary lead leaching standards. Also prohibited selling any pipe, fitting or fixture that was not lead free.
REGULATION OF LEAD IN PLUMBING
- 2011 - Congress passed the reduction of lead in drinking water act, revised the definition of "lead free" by lowering the maximum content of lead in pipe to 0.25% and mandated the requirements for lead-free products to be in compliance with voluntary lead-leaching standards.
- 2013 - Proposed amendments to be "lead free" for plumbing fixtures used for non-potable use, filter mount, distribution system valves, service saddles, etc.

REGULATION OF LEAD IN WATER LEAD AND COPPER RULE
- Prior to 1994 - Lead limit was set at 50 ppb at the distribution system entry point
- 1991 - Lead and Copper Rule - Established a MCL of 0 ppb, established testing requirements and treatment rule, established an action level for lead of 10 ppb, identified treatment techniques to reduce corrosion of lead in the distribution system.
- 2000 - Minor correction to the lead and copper rule - Address implementation issues arising from legal challenge.

REGULATION OF LEAD IN WATER LEAD AND COPPER RULE
- 2004 - Minor revisions to earlier revisions - Corrected up to admissibly changed text from previous revision.
- 2007 - Revisions to rule (short term revision) - These revisions address admissibly changed text, customer awareness and lead service line inventory. This revision allows customers to receive an inventory of their service line and learn information.

THE BIG QUESTION
LEAD SERVICE LINE INVENTORY
- Right now no easy method exists to inventory lead service lines.
- One possible approach is a multi-step approach, with each subsequent step requiring more effort and cost. It can start with a detailed review of local plumbing codes, customer files, old system maps, old field books, purchase records, board meeting minutes, etc. to try to identify the location of lead service lines or dates of the last time that lead service lines were installed in the distribution system.
- We can then use our GIS system to identify areas that have the greatest potential for lead service lines based on the age of the water main.
- Finally, we can excavate adjacent to the meter box or at the connection stop and look at the service line material.
THE BIG QUESTION?
LEAD SERVICE LINE INVENTORY

- Another possible approach is to test the water at each meter for LEAD. This would be an indirect method but quicker and at less cost.
- The Water Research Foundation has an app for projects that will investigate service line material identification techniques.
HOW DO WE ADDRESS LEAD SERVICE LINES?

- DO NOTHING
- CONTROL CORROSION / TEST AND MONITOR
- ADD PHOSPHATE / TEST AND MONITOR
- REPLACE ALL LEAD "PC RAILS" AND SERVICES
**CORROSION CONTROL**

Is this the answer?

- Corrosion control was reviewed by P.H. Smith at our last meeting.
- If we implement corrosion control, we must evaluate the distribution system to determine the best approach for each system. Corrosion control without phosphates usually results in milk in water leaving the water treatment plant.
- Once implemented, we must monitor the distribution system to make sure the selected approach is effective. If not effective, we can modify our approach.

**PHOSPHATE ADDITION**

Is this the miracle chemical?

- Polyphosphate will not prevent corrosion. It will help with "cleaning up" the distribution system.
- Orthophosphate will help prevent corrosion in the distribution system by coating the interior of pipes.
- Phosphate addition works best at a moderate pH of 7.0 to 7.6.
- Typical doses of phosphate range from 6 mg/l to 10 mg/l.

**CORROSION CONTROL**

- Every system is unique and what will work for one system may or may not work for another. Each system will have to be evaluated to determine the best approach for corrosion control.
- Distribution system monitoring is essential for success. Implementation is not as simple as hooking up a chemical feed pump, having the chemical salesperson set the dose and your done.
- Upper management must be involved and committed to success. Corrosion control can be expensive and at times frustrating.

**QUESTIONS**