Ohio Public Water Systems and Phosphate Use

Lake Erie Phosphorus Task Force Meeting

May 23, 2007

OhioEPA

Why do Water Systems Add PO4?

Corrosion Control

- Corrosion inhibitors cause protective coatings to form on pipes
- Inorganic phosphates and silicates are added to treated water to prevent Pb/Cu from leaching out of pipes

Sequestration of Iron and Manganese

- Polyphosphates are added to water prior to chlorination, create colorless phosphate complexes

Ohio PWS use of Phosphate

1991 USEPA Lead and Copper Rule

- Established MCLG of zero for lead in DW and a treatment technique to reduce corrosion w/in the distribution system

1993 Ohio EPA adopted lead and copper rules

- OAC 3745-81, Rules 80-90

Mid-90s to current

- Ohio PWS adding corrosion control measures, most opting for phosphate addition

Lead and Copper Rule Requirements

Larger systems (>50K)

- 1993 required to completed initial Pb/Cu monitoring
- 1994 corrosion monitoring plans approved
- 1997 corrosion control treatments installed

Not all large systems are required to installed CC treatment

- Can prove 'optimal corrosion control' or that their 90% Pb level and highest source water concentration is < 5.0 ppb and they must not exceed Cu action level

Medium and small systems

- Required to follow schedule initiated by an exceedence of Pb/Cu action levels

How many PWS Add Phosphate?

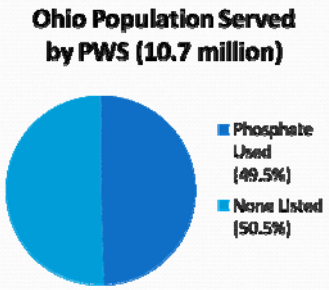
Statewide Summary

Source Type

- SW Source 62/325 (19%) Systems
- GW Source 138/5300 (2.6%) Systems

Community PWS

- 58 /275 (21%) SW Systems
- 104/1000 (10%) GW Systems



How many PWS Add Phosphate?

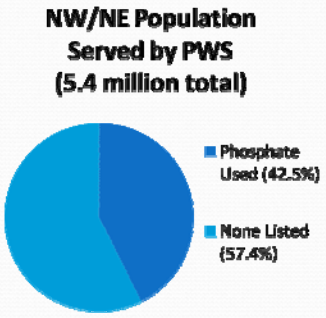
NW/NE District Summary

Source Type

- SW Source 24/168 (14%) Systems
- GW Source 81/3036 (2.7%) Systems

Community PWS

- 23/150 (15%) SW Systems
- 60/488 (12%) GW Systems



Examples of PWSs using Phosphate

Toledo, Bucyrus, Upper Sandusky

- 2001 PO4 addition

Fremont

- 2000 PO4 addition

Cleveland

- 1996 PO4 addition

Akron – prior to 1992 PO4 addition

- 1998 OEPA letter requiring 0.6 mg/L minimum

Available PO4 Treated WQ Data

Systems adding phosphate must submit data to OEPA for Total P monthly, if PO4 used must test every 2 weeks

- Typical target range 1.0-3.0 mg/L
- PO4 levels at NW/NE water systems
  - Maximum = 0.2-3 mg/L, Average = 0.2-1.7 mg/L
- Target concentration will vary depending on design and distribution system
- Akron target = 1-5 mg/L
  - 2006: Avg. = 1.0 mg/L, Max. = 2.1 mg/L

Recognition of Potential Impact

- AWWA March 2007 fact sheet “Lead in Drinking Water”
  - acknowledges that while use of phosphate is an effective corrosion inhibitor, it does increase PO4 content of WW in that community
- Minnesota’s May 2007 Summary of Drinking Water Protection Activities for 2005
  - states that due to concerns with potential environmental impacts from P-addition, some systems were unable to add PO4 at doses necessary to achieve Pb/Cu compliance

Ohio EPA – Next steps

- DDAGW is currently in consultation with DSW on potential impacts
- If needed, additional information could be compiled on phosphate use by PWS in the Lake Erie basin or a watershed level case study developed

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