



LCR Compliance Training New Source and/or Treatment Impacts

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Outline

- Concerns
- Regulatory Requirements
- EPA OCCT Guidance – Chapter 6
- Summary of Changes

Flint, MI Case Example

Parameter	Before	After
pH	7.38	7.61
Hardness (mg/L as CaCO ₃)	101	183
Alkalinity (mg/L as CaCO ₃)	78	77
Chloride (mg/L)	11	92
Sulfate (mg/L)	25	41
CSMR	0.45	2.24
Orthophosphate (mg PO ₄ /L)	1.07	0
DIC (mg C/L)	10.2	10.0
Theoretical Pb (mg/L)	0.027	0.260

Regulatory Requirements

- RCSA Section 19-13-B102e(8)(D)(iv)(VII) – Any CWS or NTNC subject to a reduced monitoring frequency...
 - Shall obtain approval from the department in writing of any upcoming long-term change in treatment or addition of a new source
 - The department may require the CWS or NTNC to resume routine sampling and collect the number of samples specified for standard monitoring, or
 - Take other appropriate steps, such as increased water quality parameter monitoring or re-evaluation of corrosion control treatment given the potentially different water quality considerations



Source of Supply Changes

What constitutes a Source Change?

- Addition of a Newly Drilled/Developed Well
- Activation of an Inactive Existing Source
- Water Purchase through a New Interconnection



Long-Term Treatment Changes

What constitutes a Long-Term Treatment Change?

- Addition of a New Treatment Process
- Modification of an Existing Treatment Process



EPA OCCT Guidance Chapter 6

LCR Impacts from

Source/Treatment Changes

Examples from Source Water Changes

- Direct Impacts on CCT:
 - Changes to pH/Alkalinity/DIC
 - Changes in Corrosion Inhibitor Dose
- Other Impacts on CCT Effectiveness:
 - NOM
 - Metals
 - Chloride/Sulfate
 - ORP
 - Buffer Intensity



EPA OCCT Guidance Chapter 6 LCR Impacts from Source/Treatment Changes

- Treatment that can affect LCR
 - Water Softening/RO
 - Disinfection/nitrification
 - Coagulation/NOM
 - Greensand Filtration/GAC
 - Aeration/oxidation
 - pH/alkalinity adjustment
 - Chloride/Sulfate Mass Ratio
 - Blended Phosphates- Poly vs. Ortho
- Fix one Problem, Create another – Simultaneous Compliance
 - Add Phosphate without Cl₂ – bacteriological issues
 - Water Softener – creates more aggressive water
 - Disinfection – corrosion

Changes for New Sources of Supply

- Require an assessment of raw water quality with respect to potential corrosivity prior to well use approval for CWS and NTNC systems
- Modified Well Water Quality and Quantity Suitability Application (WQQSA)
 - Include additional parameters including a “Saturation Index” calculation (i.e. Langelier Index)
 - Include questions about POE/distribution (sole source vs. one of many sources) and plans for new or existing treatment that may affect corrosivity



Changes for New Sources of Supply Cont'd

- If initial assessment as part of WQQSA concludes the potential for the new source to have corrosive properties:
 - Additional corrosivity analysis of entry point (and after any treatment) water quality may be required
 - Corrosion control treatment may be required

WQQA Section 9(a & b)

9a. **Table I – Corrosivity Potential Assessment (includes discussion in 9b.)**

Laboratory Name:		
Lab ID#: PH-		Sample Collection Date:
Parameter:	Standard:	Results:
pH**	6.4-10	
Hardness** (as CaCO ₃)	*	
Alkalinity**	*	
Total Dissolved Solids	*	
Conductivity (measured in the field)	*	
Temperature (measured in the field)	*	
Saturation Index***	*	

* MCL or AL has not been established for this parameter.

** Already sampled as part of other tables

***In accordance with Standard Methodology 2330

9b. is continued on next page...

9b. **Corrosivity Potential Assessment Discussion**

Use sample results listed above with any other relevant system information as detailed in to provide an assessment of whether or not the new well has a high potential to cause corrosion problems in the distribution system once it is approved for use. Relevant system information can include but is not limited to sole source vs. multiple sources of supply for PWS, distribution system construction, and if applicable, similarities between water quality and construction of new source and old source it is replacing, current compliance with LCR, and any existing or proposed treatment, etc.



Revert to Standard Monitoring

- All CWS and NTNC activating new sources of supply will be required to return to baseline Pb/Cu monitoring to demonstrate compliance*.
 - Term included in Well Use Approvals/SEW Permits
- All CWS and NTNC installing new treatment or modifying existing treatment that could affect water quality parameters will be required to return to baseline Pb/Cu monitoring to demonstrate compliance*.
 - Term included in Project Review Approvals

* Still working on “other appropriate steps” and will be getting stakeholder input regarding this issue.



Thank You!

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