Ohio EPA's Corrosion Control Treatment Evaluation Process

February 9, 2021

Ashley Voskuhl

ashley.voskuhl@epa.ohio.gov

Ohio Environmental Protection Agency

Training Agenda

- Introduction
- Process Overview
- Water Quality Parameter Monitoring
- Corrosion Control Treatment Evaluation
- Tips for Implementation

Acronyms

- ALE: Action Level Exceedance
- CCT: Corrosion Control Treatment
- LCR: Lead and Copper Rule
- LSL: Lead Service Line
- OAC: Ohio Administrative Code
- OCCT: Optimal Corrosion Control Treatment
- OWQP: Optimal Water Quality Parameter
- WQP: Water Quality Parameter

Ohio Environmental Protection Agency

What is corrosion control?

- Lead and copper enter drinking water due to the corrosion of service line and household plumbing materials
- Reducing water corrosivity (or controlling corrosion) is the primary method for reducing the health risk of lead and copper in drinking water
- Having a lead 90th percentile below 15ug/L does not mean a system has corrosion control
- “Corrosion Control Treatment” is intertwined with everything affecting distribution system water chemistry

Ohio Environmental Protection Agency

Optimal Corrosion Control

- US EPA method of determining compliance with CCT requirements
- CCT that minimizes lead & copper levels in taps/customer exposure
- Prevents PWS from violating lead and copper regulations by overall process control + water quality optimization
- OCCT is not an independent, separate process
- More than pH adjustment or phosphate addition
- **Episodic Pb spikes cannot be totally prevented when lead sources remain present.**

Ohio Environmental Protection Agency

OVERALL PROCESS OVERVIEW

Ohio Environmental Protection Agency

Rules Governing Corrosion Control Treatment

OAC 3745-81-81

CCT Triggers, Steps & Deadlines

OAC 3745-81-82

Description of CCT Requirements

Ohio Environmental Protection Agency

What is a corrosion control treatment evaluation?

- *"A WQP comparison, CCT Recommendation, or CCT Study, including necessary detail plans which includes an assessment of WQPs collected"*
- Various events can "trigger" an evaluation
- There are 8 steps to the overall CCT evaluation and implementation process
  - Evaluation Steps (Steps 1-4)
  - Implementation Steps (Steps 5-8)

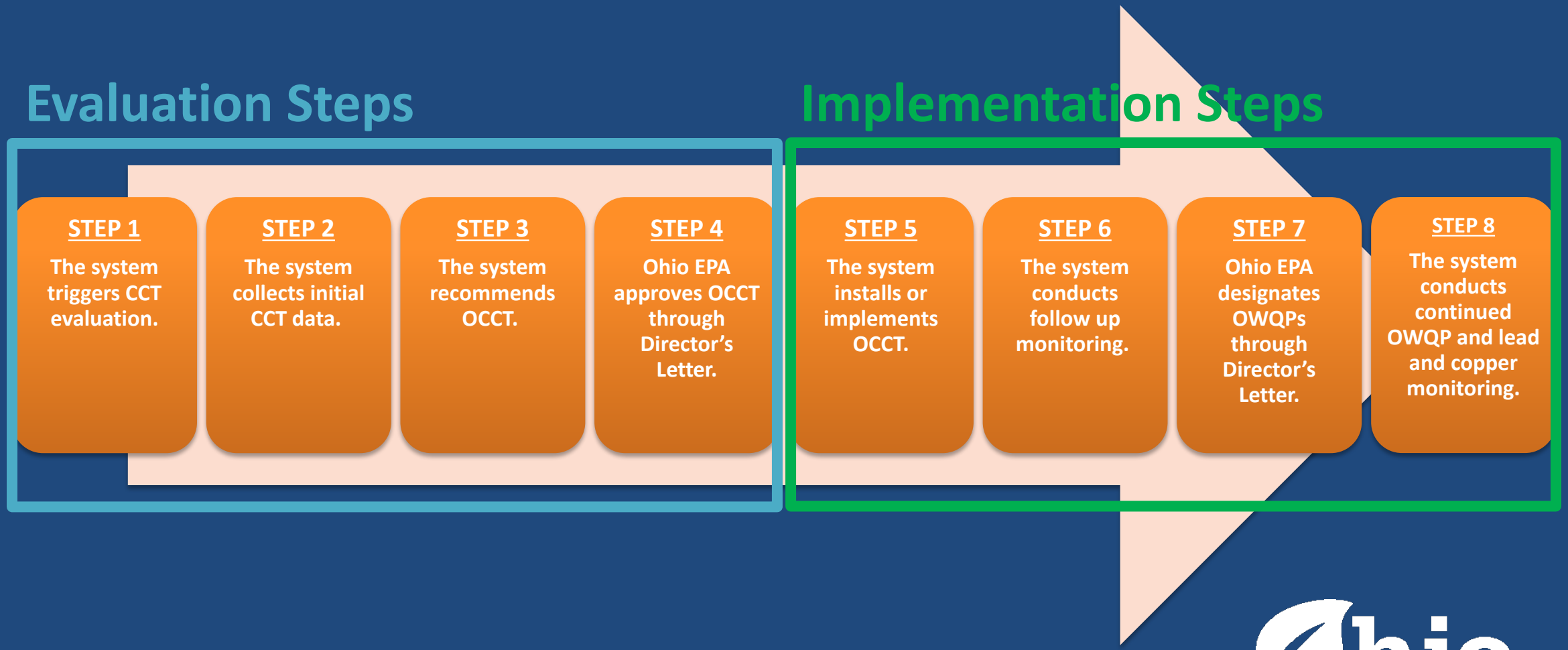
Ohio Environmental Protection Agency

What triggers a corrosion control treatment evaluation?

- All large PWSs (serving more than 50,000 persons)
- Any PWS with a lead or copper ALE
- A change in source or the addition of a new source;
- A substantial change in water treatment;
- A Federal Type 59 violation (OWQP excursion violation); or
- Any other event determined by the Director to have the potential to impact the water quality or corrosiveness of the system

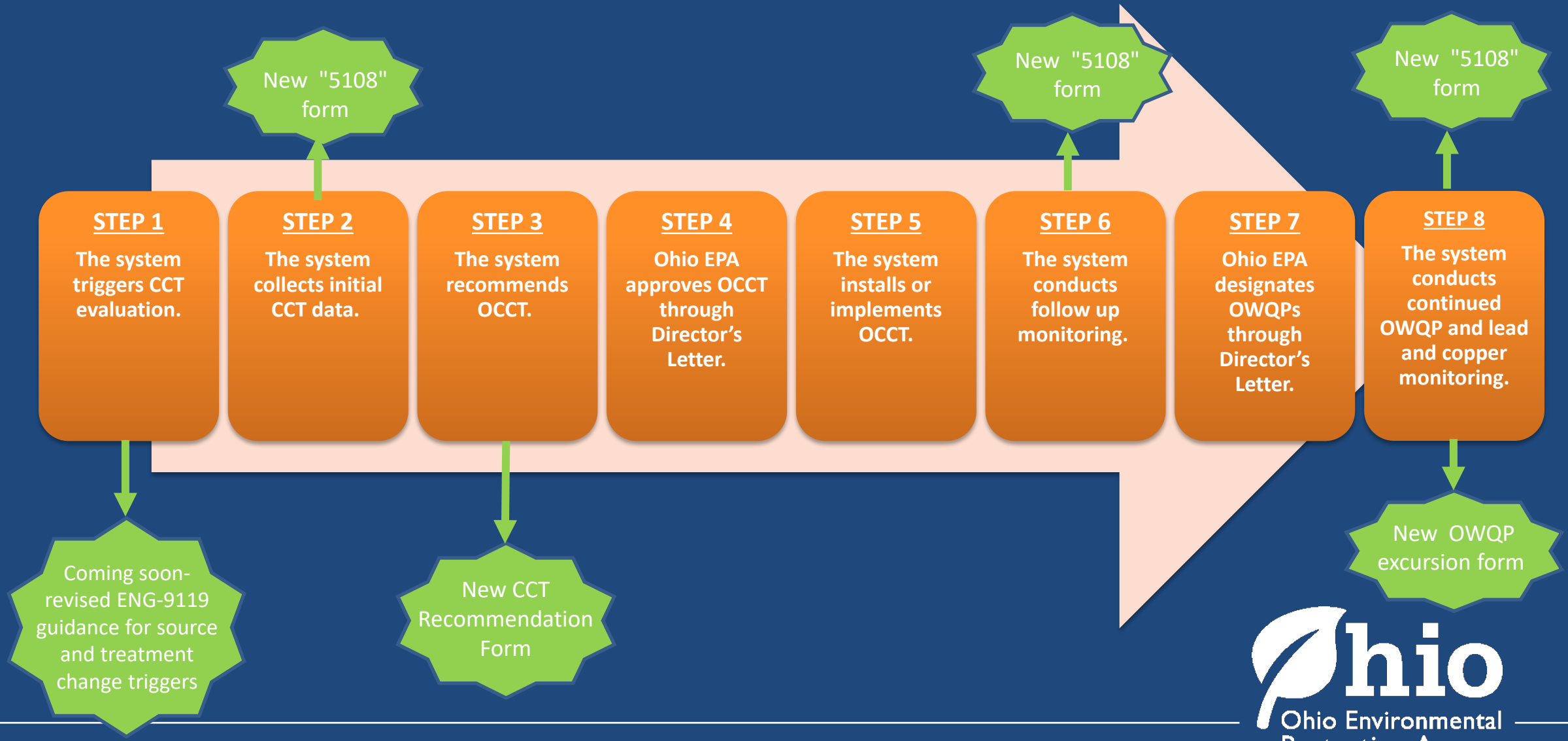
Ohio Environmental Protection Agency

Corrosion Control Treatment Process



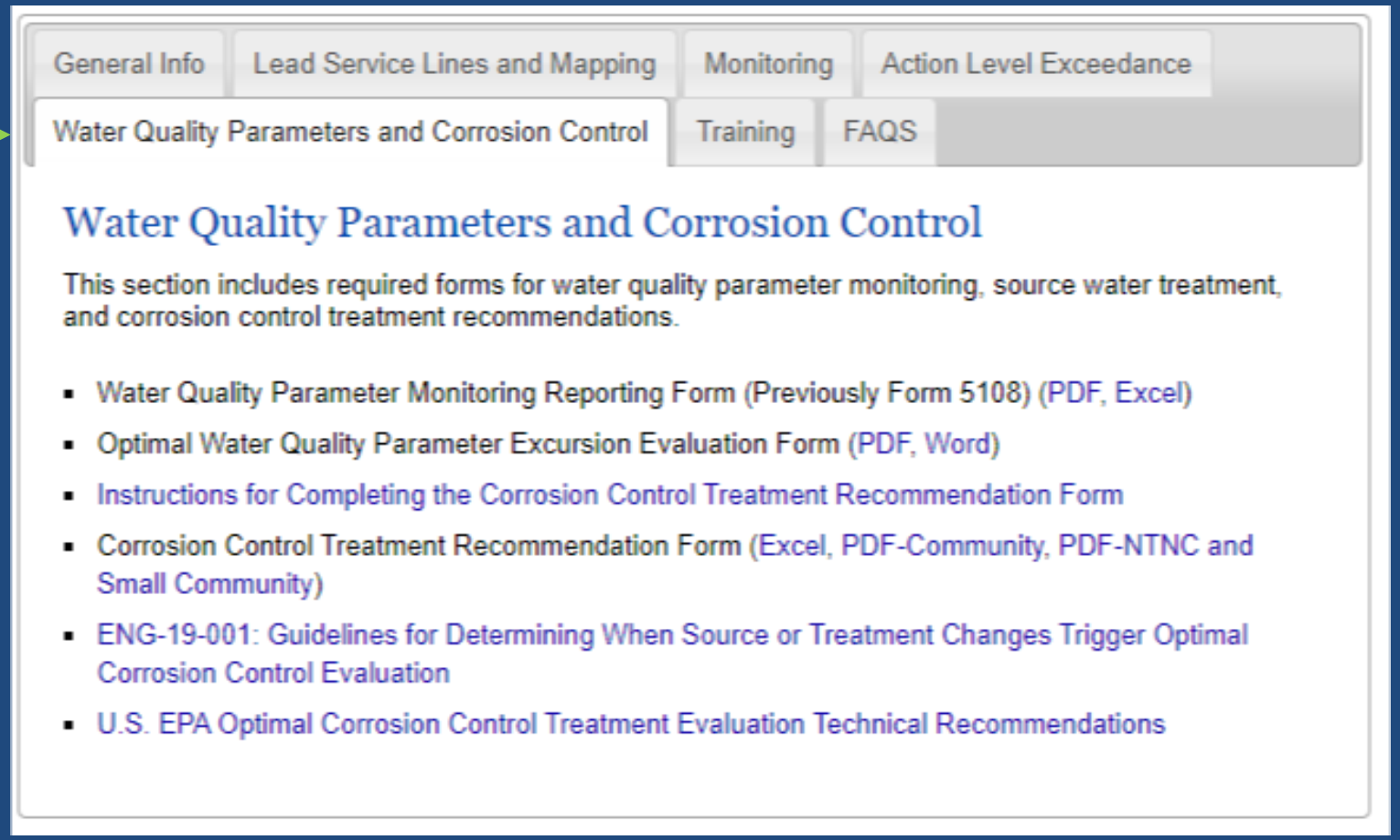
Ohio Environmental Protection Agency

New Guidance, Forms & Templates



Ohio Environmental Protection Agency

Ohio EPA's Lead and Copper Website



epa.ohio.gov/ddagw/pws/leadandcopper

Ohio Environmental Protection Agency

When will an evaluation be required for source or treatment changes?

- Guidelines for Determining When a Source or Treatment Change Triggers a Corrosion Control Treatment Evaluation
  - Final Guidance Coming Soon – Draft available: https://epa.ohio.gov/Portals/28/documents/rules/proposed/ENG-9119-GD.pdf
- Outlines what types of source and treatment changes may trigger a CCT evaluation and the extent of that evaluation
  - Dependent on the risk of the change, PWS size, and existence of LSLs
- Provides monitoring and follow up requirements

Ohio Environmental Protection Agency

Notification of CCT Evaluation Requirements

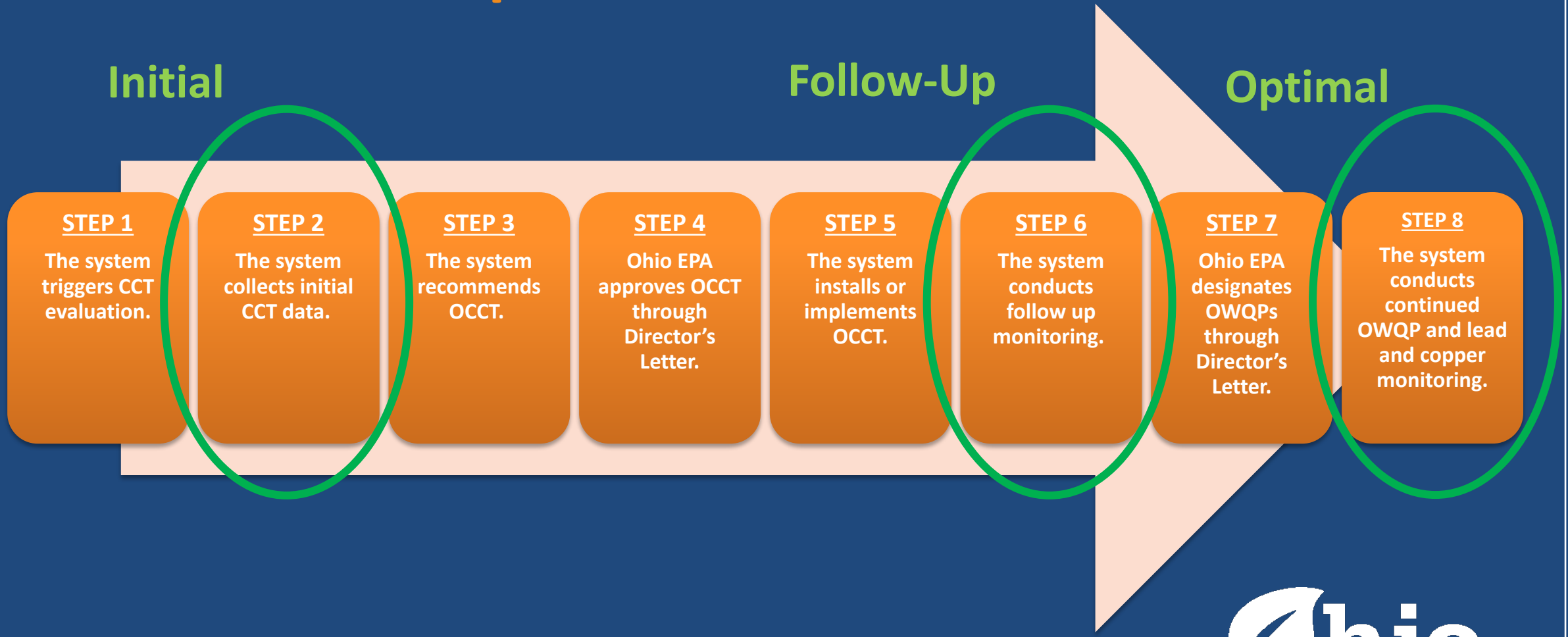
- ALE or CCT letter
- Change in population letter
- Pre-design meeting
- Enforcement negotiation meeting
- General Plan comment letter or approval
- Detail plan comment letter or approval

Ohio Environmental Protection Agency

WATER QUALITY PARAMETER MONITORING

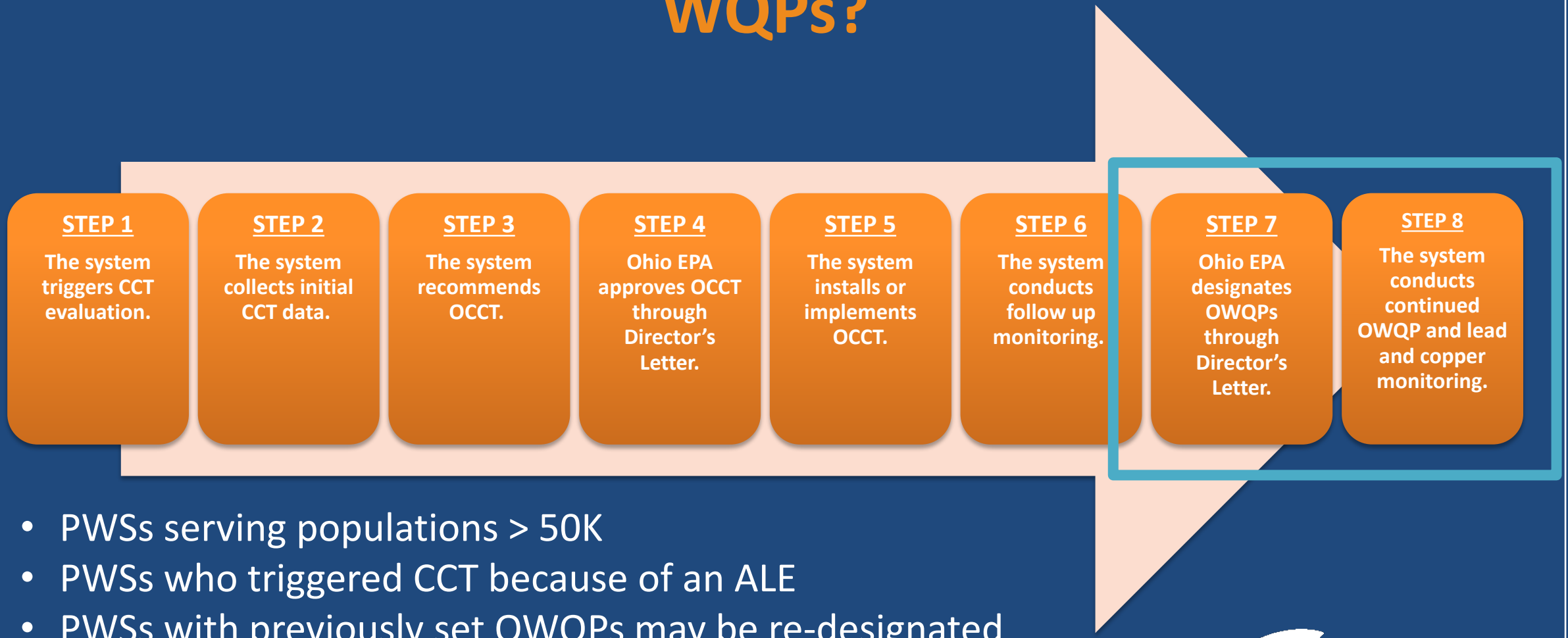
Ohio Environmental Protection Agency

WQPs Collected Throughout Evaluation and Implementation Process



Ohio Environmental Protection Agency

Which systems are designated with Optimal WQPs?



- PWSs serving populations > 50K
- PWSs who triggered CCT because of an ALE
- PWSs with previously set OWQPs may be re-designated
- Other PWSs as determined by the director

Ohio Environmental Protection Agency

Which parameters are required to evaluate water quality with respect to corrosion?

Always Required for Initial	May Be Required – See CCTR Form Instructions
• pH • temperature • alkalinity • calcium • TDS or conductivity • hardness • Chloride (EP only) • Sulfate (EP only) • Iron (in DS only if detected at EP) • Manganese (in DS only if detected at EP)	• Lead • Copper • Orthophosphate • total phosphorous • Silica • free chlorine • total chlorine • dissolved oxygen • Aluminum • dissolved inorganic carbon* • stability*

Where are WQP samples collected?

- **(Raw water)**
  - Only if there is a source change
- **Entry point**
- **Distribution system**
  - # of locations required is based on system size.

Population	Required Distribution Sample Locations for Initial WQP, Follow Up WQP, and Routine OWQP
> 100,000	25
10,001 – 100,000	10
3,301 – 10,000	3
501 – 3,300	2
101 – 500	1
< 101	1

Ohio Environmental Protection Agency

Requirements for Initial WQP Monitoring

Two Sampling Events per Sample Site

(At least 1 week apart)

- Raw (if Applicable)
- **Each** Entry Point
- **Each** Distribution Site

Each sampling event should be conducted on the same day from all sites

- All parameters for each site

Ohio Environmental Protection Agency

When should Initial WQP Sampling be conducted?

Action Level Exceedance	Population Increase to >50,000	All other triggers
• Within the monitoring period OR up to 30 days after the monitoring period	• Within 6 months of the population change	• Before submission of CCT evaluation (within 18 months) • OR prior to proposed change

Ohio Environmental Protection Agency

Requirements for Follow Up and Optimal WQP Monitoring

- Ongoing throughout 6-month monitoring periods
  - Follow Up: Minimum 1 year of sampling after installation
  - OWQP: Ongoing after ranges designated, subject to excursions
- Required parameters determined by Ohio EPA
- Monitoring Frequency
  - Entry Point: Minimum 1 sample every 2 weeks
  - Distribution: # sites based on population; 2 samples per monitoring period per parameter per site (same as initial)

Ohio Environmental Protection Agency

Reporting WQP Monitoring

- Within 10 days following the end of the month in which the system received the sample results
- (New) Water Quality Parameter Reporting Form
  - Previously Form 5108
  - Initial WQP monitoring & distribution sites for follow up & optimal
- Monthly Operating Reports
  - Entry point reporting for follow up and optimal WQP monitoring
- Dosages for corrosion control chemicals may be recorded on bench sheets, if applicable

Ohio Environmental Protection Agency

CORROSION CONTROL TREATMENT EVALUATION

Ohio Environmental Protection Agency

Types of CCT Evaluations

- OWQP Excursion Evaluation
- WQP Comparison
- Corrosion Control Treatment Recommendation
- Corrosion Control Treatment Study

Ohio Environmental Protection Agency

What triggers an OWQP Excursion Evaluation?

- ☒ Population > 50,000
- ☒ Lead or Copper Action Level Exceedance
- ☒ New Source or Source Change
- ☒ New Treatment or Treatment Change
- ☑ OWQP Excursion Violation
- ☒ Director Determination

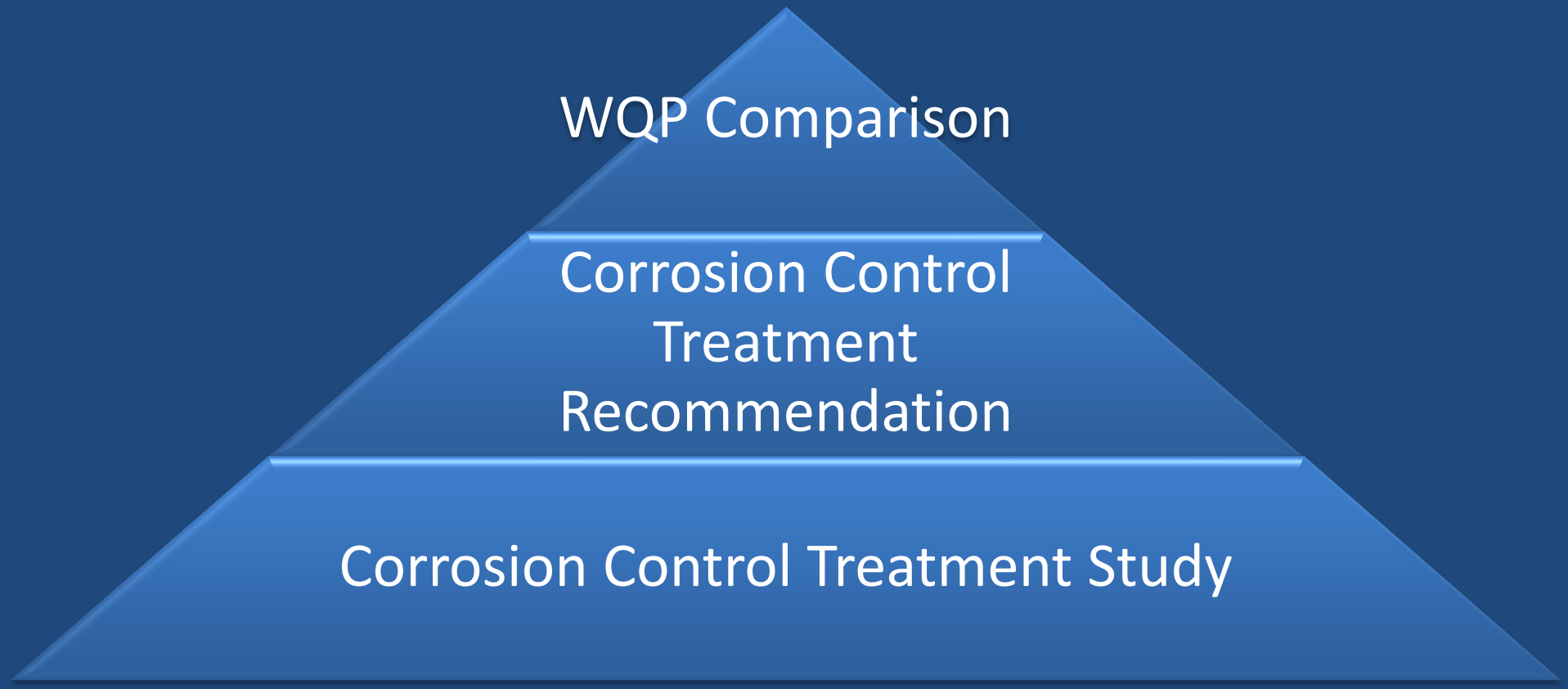
Ohio Environmental Protection Agency

OWQP Excursion Evaluation Overview

- Only applicable if OWQPs are assigned
- (New) OWQP Excursion Evaluation Form
- Sent with Type 59 OWQP Excursion Violation Letter
  - Also available on our website
- "Pre-evaluation" before requiring a CCT Evaluation
  - System already has CCT installed at their PWS and OWQPs assigned
- May be required to conduct a CCT recommendation or study after multiple excursion violations

Ohio Environmental Protection Agency

CCT Evaluation Hierarchy



Ohio Environmental Protection Agency

What triggers a Water Quality Comparison?

- ☒ Population > 50,000
- ☒ Lead or Copper Action Level Exceedance
- ☑ New Source or Source Change
- ☑ New Treatment or Treatment Change
- ☒ OWQP Excursion Violation
- ☑ Director Determination

Ohio Environmental Protection Agency

Water Quality Comparison Overview

- Ensure change will not impact water quality of system
- Letter to the agency
  - Request for waiver of CCT recommendation/study requirements
  - Parameters collected before the change
  - Explanation for why change will not affect corrosion
- WQP monitoring required after change
  - Another round of “initial” WQP monitoring
  - Same parameters collected before change

Ohio Environmental Protection Agency

What triggers a Corrosion Control Treatment Recommendation?

- ☒ Population > 50,000
- ☒ Lead or Copper Action Level Exceedance (> 3,300)
- ☑ Lead or Copper Action Level Exceedance(< 3,300)
- ☑ New Source or Source Change
- ☑ New Treatment or Treatment Change
- ☑ OWQP Excursion Violation
- ☑ Director Determination

Ohio Environmental Protection Agency

Corrosion Control Treatment Recommendation

- Determine the need for installation of CCT
- Determine an appropriate CCT method
- Corrosion Control Treatment Recommendation Form & Instructions
- Required to be submitted
  - Within 18 months of trigger (or prior to plan approval)
  - Except ALEs, due 6 months after monitoring period

Ohio Environmental Protection Agency

Corrosion Control Treatment Recommendation Form

PWS Information	Exhibit D	Exhibit E	Appendix A	Appendix B
• Basic information on system conducting recommendation	• PWS WQP and LCR data • Treatment process information • Lead service line information/piping information • Distribution system materials and operation	• Identification of primary and supplemental CCT options, including the option for no installation of OCCT • Evaluation of secondary impacts • Documentation of recommendation	• Used to summarize proposed water quality at EP and in the DS.	• Information on constraints that must be evaluated in Exhibit E

CCTR Form Instructions are available to assist in completing the recommendation

Ohio Environmental Protection Agency

What triggers a Corrosion Control Treatment Study?

- ☑ Population > 50,000
- ☑ Lead or Copper Action Level Exceedance
- ☑ New Source or Source Change
- ☑ New Treatment or Treatment Change
- ☑ OWQP Excursion Violation
- ☑ Director Determination

Ohio Environmental Protection Agency

CCT Study Requirements

When is a CCT Study required?

- Outlined in the initial letter outlining CCT requirements
- May require a CCT study after review of a CCTR form

What does a CCT Study evaluate?

- The effectiveness of:
  - Alkalinity and pH adjustment
  - The addition of a corrosion inhibitor

Specific requirements outlined in OAC 3745-81-82

Ohio Environmental Protection Agency

CCT Study Options

CCT Study can be either be a desktop or demonstration study

Desktop

- Analogous treatments with other systems of similar size
- Water chemistry
- Distribution system configuration

Demonstration

- Pipe rig/loop tests
- Metal coupon tests
- Partial system tests
- Other tests may be acceptable for non-ALE triggers

Ohio Environmental Protection Agency

Agency Review and Approval

- Ensure all supporting data is available and makes sense
  - WQP and LCR data
  - Treatment plant operations
- Ensure compliance with Ten States Standards
  - Detail plans must be submitted for any proposed changes
- Review in conjunction with US EPA's Optimal Corrosion Control Treatment Evaluation Technical Recommendations
- Agency will communicate follow up monitoring requirements
- Outline implementation plan

Ohio Environmental Protection Agency

TIPS FOR IMPLEMENTING A CCT EVALUATION

Ohio Environmental Protection Agency

Tips for Implementing a CCT Evaluation

- Ensure changes are made gradually
- Ensure follow up samples are collected as required and reported on time
- Operators should be prepared to address adverse affects, increased complaints, discoloration in distribution, simultaneous compliance etc.
- Interim measures such as flushing or additional monitoring may need to be considered

Ohio Environmental Protection Agency

QUESTIONS?

Ohio Environmental Protection Agency