



# Maximum Contaminant Level (MCL) and Treatment Technique (TT) Violations

Presented by Katherine Valentine

Compliance Assistance Coordinator

La Paz & Mohave Counties





# **MAXIMUM CONTAMINANT LEVEL (MCL) VIOLATIONS**

## Maximum Contaminant Level Goal (MCLG)

- **The level** of a contaminant in drinking water **below which there is no known or expected risk to health.** MCLGs allow for a margin of safety and are non-enforceable public health goals.

## Maximum Contaminant Level (MCL)

- The **highest level** of a contaminant that is **allowed in drinking water.** MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.

## Secondary Maximum Contaminant Level (SMCL)

**For Community Water Systems:**  
A SMCL exceedance for fluoride requires public notice, but it is **NOT** a violation

- Determined from compliance sampling results using:
  - An individual sample result
  - An average of an individual and confirmation (CO) sample result
  - A running annual average (RAA)
    - 4 consecutive quarters
    - Isolated EPDS (Entry Point to the Distribution)
  - A locational running annual average (LRAA)
    - 4 consecutive quarters
    - Individual sampling location

- **Acute contaminants** can cause immediate health impacts after exposure to levels above the MCL
  - MCL violation based on MCL exceedance of
    - Individual sample result, or
    - Average of individual & CO results
- **Chronic contaminants** can cause long-term health impacts after long-term exposure to levels above the MCL
  - MCL violation based on MCL exceedance of
    - RAA, or
    - LRAA

# MCL: Acute Inorganic Contaminants (IOCs)

Contaminant	MCL (mg/L)
Nitrate	10
Nitrite	1

ALL Public Water Systems | EPDS Specific



High nitrates can cause blue baby syndrome (and death) by preventing the blood from carrying oxygen

## MCL Violation Determination

- The average of the individual and CO samples exceeds the MCL
- An individual sample exceeds the MCL, if no CO sample taken within 24 hours

## MCL Violation Returns to Compliance (RTC)

### Next quarter results are below the MCL

- Must have at least 2 consecutive quarters of sampling for groundwater (GW) systems
- Must have at least 4 consecutive quarters of sampling for surface water (SW) systems

# MCL: Chronic Inorganic Contaminant (IOCs)

Contaminant	MCL (mg/L)
Antimony	0.006
Arsenic	0.01
Asbestos	7 MFL
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cyanide	0.2
Fluoride	4
Mercury	0.002
Nickel	N/A
Selenium	0.05
Sodium	N/A
Thallium	0.002

CWS & NTNCWS only | EPDS Specific

MCL Violation Determination

**When monitoring every YR, 3Y, or 9Y:**

- Individual sample exceeds MCL, or
- Average of individual and CO samples exceed MCL
  - \*2 weeks to take CO sample

**When monitoring every quarter:**

- RAA exceeds MCL

MCL Violation Returns to Compliance (RTC)

**Next quarter RAA is below the MCL**

- Must have at least 2 consecutive quarters of sampling for GW systems
- Must have at least 4 consecutive quarters of sampling for SW systems

# MCL: Synthetic Organic Contaminant (SOCs)

Contaminant	MCL (mg/L)
Alachlor (Lasso)	0.002
Atrazine	0.003
Benzo(a)pyrene	0.0002
Carbofuran	0.04
Chlordane	0.002
Dalapon	
1,2-Dibromo-4-chloropropane	
Di(2-ethylhexyl)phthalate	
Dinoseb	
Diquat	
2,4-D (2,4-Dichlorophenoxyacetic acid)	
Endothall	
Endrin	
Ethylene Dichloride	
Glyphosate	
Heptachlor	
Heptachlor epoxide	

  

Contaminant	MCL (mg/L)
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Oxamyl	0.2
Picloram	0.5
Pentachlorophenol	0.001
Simazine	0.004
Toxaphene	0.003
2,3,7,8-TCDD (Dioxin)	0.00000003
2,4,5-TP (Silvex)	0.05
Polychlorinated biphenyls (PCBs)	0.0005

CWS & NTNCWS only | EPDS Specific

MCL Violation Determination

- RAA exceeds MCL
- Individual sample is 4x the MCL, or
- RAA exceeds MCL mathematically before 4 complete quarters of sampling

MCL Violation Returns to Compliance (RTC)

- Next quarter RAA is below MCL**
- Must have at least 2 consecutive quarters of sampling for GW systems
  - Must have at least 4 consecutive quarters of sampling for SW systems



# MCL: Volatile Organic Contaminant (VOCs)

Contaminant	MCL (mg/L)
1,1-Dichloroethylene	0.007
1,1,1-Trichloroethane	0.2
1,1,2-Trichloroethane	0.005
1,2-Dichloroethane	0.005
1,2-Dichloropropane	0.005
Benzene	0.005
Carbon Tetrachloride	0.005
Cis-1,2 Dichloroethylene	0.07
Ethylbenzene	0.7
(mono)chlorobenzene	0.1
O-Dichlorobenzene	0.6
Para-Dichlorobenzene	0.075
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1
Trans-1,2 Dichloroethylene	0.1
Trichloroethylene	0.005
Vinyl Chloride	0.002
Xylenes, Total	10
1,2,4-Trichlorobenzene	0.07
Dichloromethane	0.005

CWS & NTNCWS only | EPDS Specific

## MCL Violation Determination

- RAA exceeds MCL
- Individual sample is 4x the MCL, or
- RAA exceeds MCL mathematically before 4 complete quarters of sampling

## MCL Violation Returns to Compliance (RTC)

### Next quarter RAA is below MCL

- Must have at least 2 consecutive quarters of sampling for GW systems
- Must have at least 4 consecutive quarters of sampling for SW systems

# MCL: Radionuclides (RADs)

CWS only | EPDS Specific

Contaminant	MCL (pCi/L)
Gross Alpha (excl. Radon & Uranium)	15
Combined Radium	5

Contaminant	MCL (µg/L)
Combined Uranium	30

## MCL Violation Determination

- RAA exceeds MCL
- Individual sample is 4x the MCL, or
- RAA exceeds MCL mathematically before 4 complete quarters of sampling

## MCL Violation Returns to Compliance (RTC)

### Next quarter RAA is below MCL

- Must have at least 2 consecutive quarters of sampling for GW systems
- Must have at least 4 consecutive quarters of sampling for SW systems



# MCL: Disinfection By-Products (DBPs)

**TTHM/HAA5 – CWS & NTNCWS using chemical disinfection | Location Specific**  
**Bromate – CWS & NTNCWS using ozone | EPDS Specific**  
**Chlorite – CWS & NTNCWS using chlorine dioxide**

## MCL Violation Determination

### TTHM/HAA5

- LRAA exceeds MCL, or
- LRAA exceeds MCL mathematically in any given quarter

### Bromate

- RAA exceeds MCL, or
- RAA exceeds MCL mathematically in any given quarter

### Chlorite

- Average of any 3 sample set from distribution system exceeds MCL

Contaminant	MCL (mg/L)
TTHM	0.080
HAA5	0.060
Bromate	0.010
Chlorite	1.0

## MCL Violation Returns to Compliance (RTC)

### TTHM/HAA5

- Next quarter LRAA is below the MCL

### Bromate

- Next quarter RAA is below the MCL

### Chlorite

- Next month 3 sample sets are below the MCL

## ALL Public Water Systems

### Acute / *E. coli* MCL Violation Determination

- Routine TC+/EC+ and either
  - 1 or more TC+/EC+ repeat samples
  - 1 or more TC+/EC- repeat samples
  - 1 or more TC+ repeat samples not tested for EC
  - Repeat samples not taken
  - Not all repeat samples taken
- Routine TC+/EC- sample and
  - 1 or more TC+/EC+ repeat samples
  - 1 or more TC+ repeat samples not tested for EC

### MCL Violation Returns to Compliance (RTC)

- Next monitoring period with no MCL or monitoring & reporting violations

## ALL Public Water Systems Subject to GWR

**Acute / Fecal  
Indicator  
Positive**  
MCL Violation  
Determination

- GWR sample is fecal indicator positive (E. coli (EC+), Enterococci, or Coliphage)  
Corrective Actions Triggered
  - *Optional:* 5 GWR confirmation (CO) samples  
If any fecal indicator +, Corrective Actions Triggered

Corrective  
Actions  
(Treatment  
Techniques)

- Identify & correct significant deficiencies
- Provide permanent alternative source of water
- Eliminate source of contamination
- Provide 4-log treatment (removes/inactivates 99.99% viruses)

MCL Violation  
Returns to  
Compliance  
(RTC)

- Next monitoring period with no MCL or monitoring & reporting violations



# TREATMENT TECHNIQUE (TT) VIOLATIONS

- **Treatment Technique (TT):** A required process intended to reduce the level of a contaminant in drinking water
- **Treatment Technique Trigger (TTT):** An event or events that cause a TT to be required
- **TT Violation:** Resulting violation from a failure to complete a TT

TT Violations  
Return to  
Compliance  
(RTC)

- By completing the required TT



## ALL Public Water Systems

### Assessment TTT

#### Level 1 Assessment

- Systems taking  $\geq 40$  monthly routine samples:  $>5\%$  samples TC+
- Systems taking  $<40$  monthly routine samples:  $\geq 2$  TC+ samples (includes repeat samples)
- Failure to take any or all repeat samples following routine TC+
- Failure to take repeat samples within 24 hours of notification of routine TC+/EC- or TC+/EC+

#### Level 2 Assessment

- Acute *E. coli* / fecal indicator positive MCL Violation
- A second level 1 assessment triggered in a rolling 12 month period

### TT Violation Determination

- Failure to conduct assessment
- Failure to conduct assessment within 30 days
- Inadequate assessment or insufficient content:
  - Fails to evaluate minimum elements
  - Fails to conduct assessment in accordance to state directives
  - Fails to describe detected sanitary defect(s), corrective action(s) completed, and/or timetable for corrective action(s) not yet completed
- Failure to conduct corrective action(s) by agreed-upon schedule
- Level 2 Assessment not conducted by qualified operator



## Corrective Actions/Expedited Actions

- Failure to correct sanitary defect(s) found through a level 1 or 2 assessment
- Failure to complete corrective actions within the required timeframe after triggering a level 1 or 2 assessment
- Failure to comply with State-required expedited/additional actions when an E.coli MCL happens

## Start-Up Procedures

- Seasonal system fails to complete seasonal start-up procedures (or waiver for systems pressurized all year-round)



## Failure to Maintain Microbial Treatment

- Systems using membrane filtration: Failure to operate the membrane filtration in accordance with compliance requirements
- Systems using alternative 4-log treatment: Failure to monitor the treatment in accordance with monitoring requirements and operate treatment in accordance with compliance requirements
- Systems with 4-log treatment: Failure to maintain 4-log treatment before or at the first customer and failure to correct the deficiency within 4 hours

## Failure to Provide Treatment

- System fails to take a corrective action in response to TC+/EC+ source water sample

## Failure to Address a Deficiency

- After 120 days from written notification of a significant deficiency:
  - Fails to complete corrective action per plan review processes or other State guidance and direction
  - Fails to be in compliance with a State approved corrective action plan and schedule

## Failure to Address Contamination

- After 120 days of receiving notice of fecal indicator positive sample:
  - Fails to complete corrective action per plan review processes or other State guidance and direction
  - Fails to be in compliance with a State approved corrective action plan and schedule

## Single Turbidity Exceedance

- SW system with conventional or direct filtration exceeds 1 NTU in any one representative sample of filtered water
- SW system using slow sand or diatomaceous earth filtration exceeds 5 NTU in any one representative sample of filtered water.
- SW system using alternative technology filtration exceeds the standard set by the State (not to exceed 5 NTU) in any one representative sample of filtered water

## Monthly Turbidity Exceedance

- SW system with conventional or direct filtration exceeds 0.3 NTU in at least 5% of monthly measurements
- SW system using slow sand or diatomaceous earth filtration exceeds 1 NTU in at least 5% of monthly measurements
- SW system using an alternative filtration technology exceeds the standard set by the State (not to exceed 1 NTU) in at least 5% of monthly measurements

TT Violations  
Return to  
Compliance  
(RTC)

Next month with no TT  
and monitoring and  
reporting violations



## Failure to Maintain Microbial Treatment

- Entry point RDC  $< 0.2$  mg/L for  $> 4$  hours
- Distribution system RDC (total chlorine, combined chlorine, or chlorine dioxide) is non-detect in  $> 5\%$  of monthly samples for 2 consecutive months
- An unfiltered system that fails to have:
  - Redundant components to ensure continuous disinfectant application, or
  - Automatic shut off for whenever the RDC is  $< 0.2$  mg/L

## Failure to Provide Treatment

- Unfiltered system fails to meet any criteria in 40 CFR 141.71(a)&(b)
- Unfiltered system fails to install filtration by the State-determined deadline
- Unfiltered system is identified as the source of a waterborne disease outbreak

## Failure Submit Treatment Requirement Report

- Filtered system fails to report initial bin classification within 6 months of completing initial or second round of source water monitoring

## TT: No Prior State Approval

- Failure to submit proposal for treatment change before making a significant disinfection change if required to develop a disinfection profile

## Failure to Provide Treatment

- Filtered system fails to achieve treatment credit in any month by meeting the requirements in 141.716 through 141.720 for microbial toolbox options at least equal to the level of treatment required
- Filtered system fails to meet treatment requirements specified in 141.711 on time, following completion of initial or second round of monitoring

## OCCT Recommendation

- Failure to submit an OCCT recommendation on time
- Failure to submit an “acceptable” OCCT/SOWT study on time, per the requirements in 40 CFR 141.82(c)
- Failure to provide additional information requested by the State for making an OCCT determination

## SOWT Recommendation

- Failure to submit a SOWT recommendation within 180 days from the monitoring period with a lead or copper action level exceedance

## OCCT/SOWT Installation

- Failure to:
  - Have the State-designated treatment properly installed and operating, per 40 CFR 141.82(e)
  - Submit a certification of proper installation and operation, per 40 CFR 141.90(c)(4) & (d)(2)
  - Demonstrate that OCCT already exists
  - Properly install and operate source water treatment, per 40 CFR 141.83(b)(3&5)
  - Implement applicable source water treatment requirements, per 40 CFR 141.83

## OWQP Level Non-Compliance

- Failure to maintain OWQP minimum or ranges, per 40 CFR 141.82(g)
- Failure to meet daily OWQP values for more than 9 days in a 6-month compliance period

## MPL Non-Compliance

- Systems with designated SOWT exceed the Maximum Permissible Level (MPL) for lead or copper in source sample(s)

## Lead Service Line Replacement (LSLR)

- Failure to:
  - Replace the required amount of lead service lines (LSLs) by the annual deadline
  - Report the required LSL information on time, demonstrating that the replacement rate was met
  - For partial LSL Replacement: Failure to provide notice/guidance to residents  $\leq 45$  days before replacement begins
  - Collect a tap sample within 72 hours of completing a partial LSL Replacement
  - Provide owner/residents with tap sample results within 3 days of receiving results
  - Report LSLR information outlined in 40 CFR 141.90(e)
  - Complete LSLR requirements following lead ALE after implementing OCCT or SOWT

## Public Education (PE)

- Failure to:
  - Provide PE that meets the content requirements in 40 CFR 141.85(a)
  - Meet PE delivery requirements of 40 CFR 141.85(b)
  - Report required PE information on time

## Qualified Operator Failure

- Failure to have a qualified designated operator

## TT: Uncovered Reservoir

- System with uncovered finished water storage:
  - Fails to cover any uncovered finished water storage facility by the deadline, or
  - Fails to treat discharge to the distribution system, from the uncovered finished water storage facility, to achieve 4 log virus, 3 log Giardia, and 2 log Crypto treatment

## Treatment Technique Precursor Removal

- System required to meet Step 1 TOC removals has a value  $<1.00$ , calculated per 40 CFR 141.135(c)(1)(iv)



## Maximum Contaminant Level (MCL)

## Treatment Technique (TT)

What is It?

The highest level of a contaminant that is allowed in drinking water

A required process intended to reduce the level of a contaminant in drinking water

Violation  
for:

### Exceeding the MCL through:

- Individual sample
- Average of individual and CO sample
- Running Annual Average (RAA), or
- Locational Running Annual Average (LRAA)

### Failure to achieve a TT requirement:

- Complete assessment
- Address deficiency or contamination
- Provide/Maintain treatment
- Other triggered TT requirement(s)

Return to  
Compliance  
by:

### Monitoring Period with no:

- MCL exceedance(s)
- Monitoring & reporting violations

### Completing the associated TT requirement

SWTR Turbidity: month with no

- Turbidity exceedance(s)
- Monitoring & reporting violations



**QUESTIONS?**