



# EPA Region 8 Surface Water Treatment Rules & Significant Deficiencies

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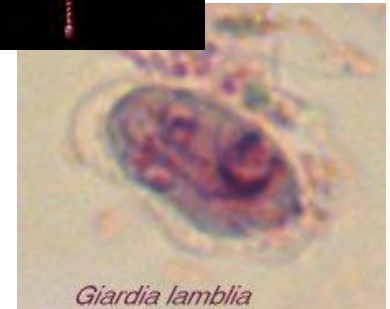
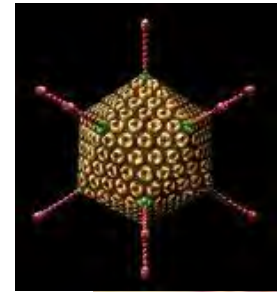
## **Discussion Outline:**

- 1. Surface Water Treatment Monitoring & Reporting Requirements.**
  - A. Basic Requirements
  - B. Common Reporting Issues
- 2. When to Contact EPA.**
- 3. LT2 Surface Water Treatment Rule Requirements & Update**
  - A. Rule Implementation Update
  - B. Installing and reporting for UV systems
- 4. Sanitary surveys – Changes & Common Significant Deficiencies**



## Surface Water Treatment Rules – Overview

- Apply to all public water systems using surface water or ground water under the direct influence of surface water (GWUDI)
- Required for community and non-community systems.
  - Acute health risk
- Treatment technique requirements (not MCLs)
- Requires multiple barriers including:
  - Filtration
  - Disinfection.





## SWTRs Treatment Techniques for Filtered Systems Require:

- At least 99% (2-logs) removal of *Cryptosporidium* (could be more based on LT2 monitoring)
- 99.9 % (3-logs) removal and/or inactivation of *Giardia*
- 99.99% (4-logs) removal and/or inactivation of viruses

ADD (+) LOGS FROM EACH TREATMENT STEP TO SHOW COMPLIANCE





## Monitoring Requirements

- (1) **Turbidity of the Combined Filter Effluent (CFE)**, to ensure that the filtration barrier is effective. Conventional/direct /membrane filtration systems must continuously monitor turbidity from individual filters (IFE). Membranes must monitor membrane integrity.
- (2) **Chemical Disinfectant Residual (e.g.,chlorine) at Point of Entry (POE)** to the distribution system. Residual must be sufficient to provide the needed inactivation barrier, **AND** always be at least 0.2 mg/L. Systems using UV must also report certain parameters.
- (3) **Disinfectant Residual in Distribution System** must be measured when Total Coliform Rule samples are taken (write results on lab slip). It must be detectable, to prevent re-growth of organisms.



# Common Reporting Issues







## CFE Turbidity

- Report 4 hr CFE turbidity at same time (if possible) every day
  - Eliminates subjectivity.
- Report the highest CFE turbidity reading for the day, even if it doesn't fall on one of the 4 hour readings.
  - If high value occurs due to pump kicking on or other issue, provide explanation.
  - CFE value can never exceed 1 or 5 NTU (depending on type of filtration)
- Rounding
  - Regulations only list 1 significant figure.



# CFE Turbidity

REQUIRED # OF 4-HOUR TURBIDITY READINGS/DAY = 6 (UNLESS PLANT OFF - INDICATE "PO" IN EACH CELL)

\*\* REPORT MAXIMUM TURBIDITY READING THAT DAY, EVEN IF IT WAS BETWEEN 4 HOUR READINGS

**DO NOT REPORT RESULTS COLLECTED DURING BACKWASH, FILTER-TO-WASTE, OR ANY TIME WATER IS NOT BEING PROCUCED FOR CONSUMPTION**

Date	1st (NTU)	2nd (NTU)	3rd (NTU)	4th (NTU)	5th (NTU)	6th (NTU)	DAILY MAX **(NTU)
1	0.13	PO	PO	PO	PO	PO	0.211
2	0.12	PO	PO	PO	PO	PO	0.204
3	0.11	PO	PO	PO	PO	PO	0.117
4	0.12	PO	PO	PO	PO	PO	0.169
5	0.11	PO	PO	PO	PO	PO	0.189
6	0.12	PO	PO	PO	PO	PO	0.165





## Chlorine Residual at POE

- Can never go below 0.2 mg/L for more than 4 hours **BUT**
- You should also be checking to make sure that the chlorine residual results in an inactivation that achieves the required logs removal / inactivation of the target organism.
  - Surveyors will be checking CT calculations during sanitary surveys.
- Good operational practice to perform these calculations at least weekly.
  - I can provide a spreadsheet for this if anyone wants it.



## You are Required to Notify EPA within 24 hours under the SWTRs if\*:

- (1) CFE turbidity exceeds the maximum limit (1 or 5 NTU)
- (2) point of entry chlorine residual drops below 0.2 mg/L

*Document time/date of these calls on the monthly SWTR report*

Call me at 303.312.6389 and leave a message if I am not available.

If situation is more serious,

\*This is not a comprehensive list of emergency situations.



## You should also notify EPA under the SWTRs if:

- You are planning to switch to a new source.
  - Additional testing might be required (i.e. LT2, etc)
- You are making changes to your treatment.
  - Might require EPA review for treatment adequacy.
- You are making significant changes to your disinfection processes.
- You are making any other changes (management, designated operators, etc)

System change forms located at: <http://www2.epa.gov/region8-waterops/reporting-forms-and-instructions-reporting-forms>



# LT2 ESWTR

*(most recent SW regulation)*





## LT2 is Risk-Based Rule: Source Water Monitoring

- Systems serving **at least 10,000** – monitor for *Cryptosporidium*, *E. coli* and turbidity at least 1x/month for 24 months
- Systems serving **<10,000** – monitor for *E. coli* biweekly for one year; evaluate annual average against “trigger” level. If exceed trigger (100 *E. coli*/100 mL), you must conduct monitoring for *Crypto*.
- Required unless a treatment plant achieves maximum (5.5 logs) *Cryptosporidium* reduction (Bin 4 treatment).



## LT2 Bins & Treatment Requirements:

Bin Classification For Filtered Systems					
<i>Cryptosporidium</i> Concentration (oocysts/L)	Bin Classification	Additional <i>Cryptosporidium</i> Treatment Required			Alternative Filtration
		Conventional Filtration	Direct Filtration	Slow Sand or Diatomaceous Earth Filtration	
< 0.075	Bin 1††	No additional treatment required			
0.075 to < 1.0	Bin 2	1 log	1.5 log	1 log	(1)
1.0 to < 3.0	Bin 3	2 log	2.5 log	2 log	(2)
≥ 3.0	Bin 4	2.5 log	3 log	2.5 log	(3)

†† Systems serving < 10,000 people that are not required to monitor for *Cryptosporidium* are placed in Bin 1.

(1) As determined by the state (or other primacy agency) such that the total removal/inactivation > 4.0-log.

(2) As determined by the state (or other primacy agency) such that the total removal/inactivation > 5.0-log.

(3) As determined by the state (or other primacy agency) such that the total removal/inactivation > 5.5-log.



## Status of WY Systems – 1<sup>st</sup> Round of LT2

- # of systems in Bin 3 or Bin 4 = 0
- # of systems in Bin 2 = **3** (need 4 logs total *Cryptosporidium* reduction)
- All other WY systems that monitored:
  - # that monitored for *E. coli* = 27; all are Bin 1
- # committed to 5.5 logs treatment waiver (filtration & UV or membranes & pretreatment) = **35**





## Compliance Dates for Installation of Additional Treatment (after 1<sup>st</sup> round of monitoring)

Schedule	Population Served	<i>Crypto</i> <u>Treatment</u> Compliance Date
<del>1</del>	100,000+	4/1/2012
<del>2</del>	50,000- 99,999	10/1/2012
3	10,000 – 49,999	10/1/2013
4	<10,000	10/1/2014



## Second round of LT2 source water monitoring

- Begins in 2015 for systems serving >50,000; starts in subsequent years for smaller systems.
  - May NOT be done early
- Does not apply to systems that maintain the maximum 5.5 logs treatment for Crypto.
  - *But this maximum treatment MUST be in place by the compliance date!*
- Must redo LT2 monitoring if change to a new SW source



## Advice Regarding UV Installation and Reporting



- Substantial # of systems still need to install and begin reporting.
- Don't wait until the last minute!
- Inform EPA of manufacturer and provide validation report before installing system.
  - Some units do not have the required certification and / or validation.
  - Clarify with the manufacturer / your engineer regarding reporting method and complexity.
- Make sure you inform / work with WY DEQ.
- Work through reporting issues BEFORE your compliance date.



# Sanitary Surveys and Significant Deficiencies



## Upcoming Changes:

- Flooded master meter pit only a significant deficiency if it relates to a leaking fitting (**Need to Confirm!!!**).
- SW / GWUDISW systems – you must be able to monitor or verify flow through your treatment process.
- High hazard cross connections and required devices have been more clearly defined.
- Flapper valves on overflows must also have a screen (unspecified size) inside.
- Drain requirements have been modified.
- Storage tanks must be cleaned and inspected at least every 10 years.
- Unknown integrity of storage tank.



## Common Significant Deficiencies:

- Lack of a written Emergency Response Plan:
  - Template located at: <http://www2.epa.gov/region8-waterops/reporting-forms-and-instructions-reporting-forms>
- Unprotected high hazard connections
- Finished water storage tank concerns
  - Overflows/drains directly connected to storm sewer
  - No 24 mesh screen on vents, overflows
  - Inadequate air gap on overflows/drains
  - Access hatch poorly constructed



# EPA Region 8 Surface Water Treatment Rules Refresher

April 2013







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## Additional Issues for SW / GU Systems

- Calibration and Condition of Monitoring Equipment
- Recording/Reporting Capability
- Disinfection Profile Available
- Filter Backwash Recycling Records Available
- Adequate Filtration and Disinfection design and operation / monitoring.
- Identify 1<sup>st</sup> customer and calculate inactivation at that point – is it adequate.
- Are you meeting treatment techniques for Crypto, Giardia and viruses?



## Significant Deficiency Requirements

- Significant Deficiencies (SDs) at Surface Water and SW Consecutives require a Written Response from the System within 45 days. The response must
  - -- indicate how you will address the SDs
  - --provide a schedule for addressing them.
- Failure to respond within 45 days, and/or failure to correct the SDs per your schedule, is a Treatment Technique violation of the Surface Water Treatment Rules.
- **Bottom line – Be proactive and avoid the process!**



## **WARWS April 24, 2013**

**Thanks!**

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