

# EPA 1623.1

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## Preparing your laboratory



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*Oklahoma Department of*  
*Environmental Quality*



# Overview

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- ◎ Background
- ◎ Planning stages of implementation
- ◎ Training- EPA Workshop
- ◎ Ordering of supplies
- ◎ Method overview / Lab set-up
- ◎ Helpful Links



## Method 1623.1: *Cryptosporidium* and



Resources & Performance

Science & Technology

Water Infrastructure

What You Can Do

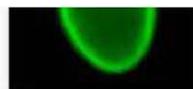
Sector  
Tribal

Pathogens, such as *Giardia* and *Cryptosporidium*, are often found in water, and can cause gastrointestinal illness (e.g., diarrhea, vomiting, cramps) and other health risks. In many cases, this water needs to be disinfected through the use of additives such as chlorine to inactivate (or kill) microbial pathogens.

*Cryptosporidium* is a significant concern in drinking water because it contaminates surface waters used as drinking water sources, it is resistant to chlorine and other disinfectants, and it has caused waterborne disease outbreaks. Consuming water with *Cryptosporidium*, a contaminant in drinking water sources, can cause gastrointestinal illness, which may be severe in people with weakened immune systems (e.g., infants and the elderly) and sometimes fatal in people with severely compromised immune systems (e.g., cancer and AIDS patients).

The purpose of the LT2 rule is to reduce disease incidence associated with *Cryptosporidium* and other pathogenic microorganisms in your drinking water. The rule applies to all public water systems that use surface water or ground water that is under the direct influence of surface water. The rule will bolster existing regulations and provide a higher level of protection of your drinking water supply by:

water reservoirs and to ensure that systems maintain microbial protection when they take steps to decrease the formation of disinfection byproducts that result from chemical water treatment.



Background

## CRYPTOSPORIDIUM IMPLEMENTATION CHECKLIST

Checklist Line Item	Length of Time to Accomplish	Accomplish by Date	Status (include date completed if complete)
X Research method, determine to proceed with certification		Spring 2014	<a href="#">Completed ~ 3/19/14</a>
X Attain funding		Spring 2014	<a href="#">Completed ~ 5/29/14</a>
X Research equipment/supply/workspace needs and prices	2 months	Spring-Summer 2014	Completed
X Order supplies, equipment, casement etc.	3 months	Spring-Summer 2014	<a href="#">Completed</a> , need to order enough reagents/supplies to get through entire certification process
X Research proficiency tests available for method		Spring 2014	<a href="#">Completed</a>
X Complete fee worksheet for test	1 month	Summer 2014	<a href="#">Completed 4/16/15</a>
X Order casement		Summer 2014	Completed
X Install casement	1 month	Summer 2014	Completed 9/2014
X Install darkroom walls		Spring 2015	OCI installed 1/29/2015
I Determine QS needs for LW	1 month	Winter 2014/Spring 2015	Waiting to add to LabWare until there is a better understanding of reporting requirements.
I Choose an accrediting body		Winter 2014/Spring 2015	Have a <a href="#">list</a> of ABs
X Determine QS needs for Micro technical		Winter 2014/Spring 2015	<a href="#">In progress</a> , implementing <a href="#">receipt logs, TNI / 2<sup>nd</sup> supplement requirements</a> . Over 50 supporting documents completed as of 6/22/15
X Research and secure hands-on analytical training		Winter 2014/Spring 2015	Training occurred in-house week of 3/16/15 and at EPA week of 3/23/15
X Set up work areas, install equipment	2-3 months	Spring 2015	Completed week of 3/9/15. New casement being ordered.
X Hands on analytical training (from an outside source)	1-2 weeks	Spring 2015	<a href="#">Completed 3/16-3/20/15</a>
X Hands on sampling training		Fall/Winter 2014	<a href="#">Completed 3/16-3/20/15</a>
X Write SOP		Winter 2014/Spring 2015	<a href="#">Draft Completed</a> by JET/LRS. Working on <a href="#">instrument maintenance</a>
			and other associated WIDS. SOP completed 6/22/15 by JEG/CRD
X Add test batch to LabWare for practice samples	2 weeks	Summer 2015	
X Decide what supplies we will provide to our customers/collection details, Determine from what PWSs to attain samples for certification		Spring 2015	Meeting 1/30/15
X Coordinate w/WQD for scheduling and compliance		Fall 2014	WG meeting 12/12/14. LT2 schedule <a href="#">here</a>
I Run samples required for certification		Summer 2015-Summer 2016	IDC Samples completed. Ongoing through process
I Gather and review all data and determine trends/recoveries/etc. per matrix		Summer 2015-Summer 2016	Ongoing through process
I Run PT samples required for certification	1 year	Fall 2015, then Spring 2016	<a href="#">Cryptosporidium Proficiency Testing Program   Wisconsin State Laboratory of Hygiene</a> In process of enrolling for Fall PT event
Develop LW V7 for TNI approved Crypto testing/reporting		Fall 2015	
Develop fact sheet and flyers for advertising		Spring 2016	
Audit/certification		Summer 2016	
Begin testing		Fall/Winter 2016	

Planning



## Method 1623.1 Workshop Syllabus: March 24 -26, 2015

### Day 1: Tuesday, 9:00 – 5:00

- 9:00 120 1-Introductions and Expectations  
9:30 2-Types of Samples & Sample Collection  
10:00 3-Filtration: Filta-Max  
10:30 BREAK/Room change  
11:00 153 3-Filtration: Envirochek HV  
12:00 LUNCH  
1:00 153 4-Elution  
1:45 Centrifugation & Aspiration Hands-on DEMO  
2:30 BREAK  
3:00 120 5-IMS theory  
4:00 126 6-Count Slides and Analyst Requirements

### Day 2: Wednesday, 9:00 – 5:00

- 8:00 153 *Early Elution team (Mia and Amy: optional)*  
9:00 120 Review IMS control and Hands-on DEMO  
10:00 BREAK  
10:10 120 IMS Tips and modifications & Trouble shooting (while rotating tubes)  
10:30 7-QA Program, Control Charts and Measuring Laboratory Performance  
11:00 153 Transfer IMS to slides  
12:00 LUNCH (Slides drying over lunch)  
1:00 153 8-Staining and Hands-on DEMO  
2:00 9-Evaluating Microscopy Slides  
2:30 BREAK  
3:00 120 10-Bench Sheets essentials  
4:00 Count Slides  
5:00 Dinner at Taste of Belgium  
<https://authenticwaffle.com/>

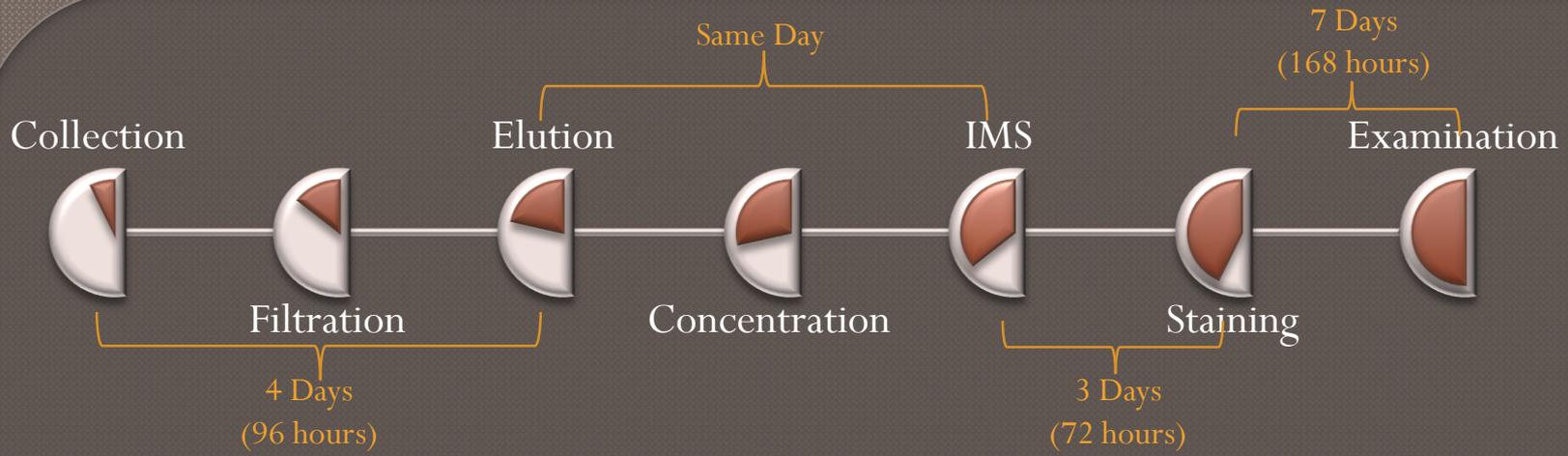
### Day 3: Thursday, 9:00 – 5:00

- 9:00 120 11-Conditioning Your Microscope  
10:00 BREAK  
10:20 Prep for Microscopy and characterize a PSC  
11:00 Count IMS controls  
12:00 LUNCH  
1:00 12-Group Analyst Verification  
2:00 BREAK  
2:30 Group Debrief (IMS counts, count slides)  
3:00 Microscope practice

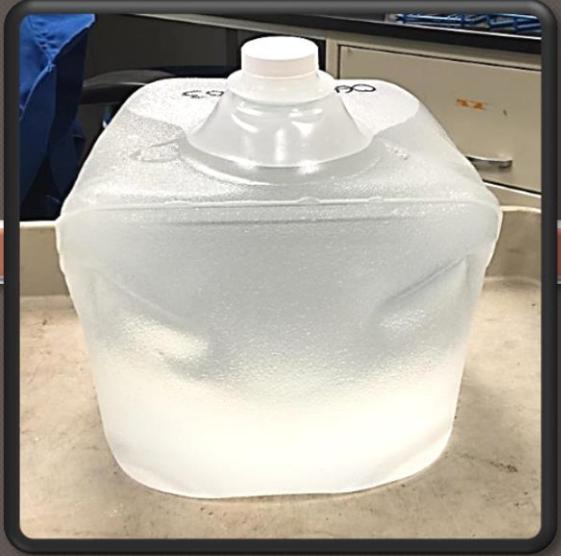
Training



# Ordering



# Method Overview



10 Liters



100  $\mu$ L

HOLD TIMES

Collection

Elution

IMS

Examination



# Method Overview

Collection

Elution

IMS

Examination



# Method Overview

Collection

Elution

IMS

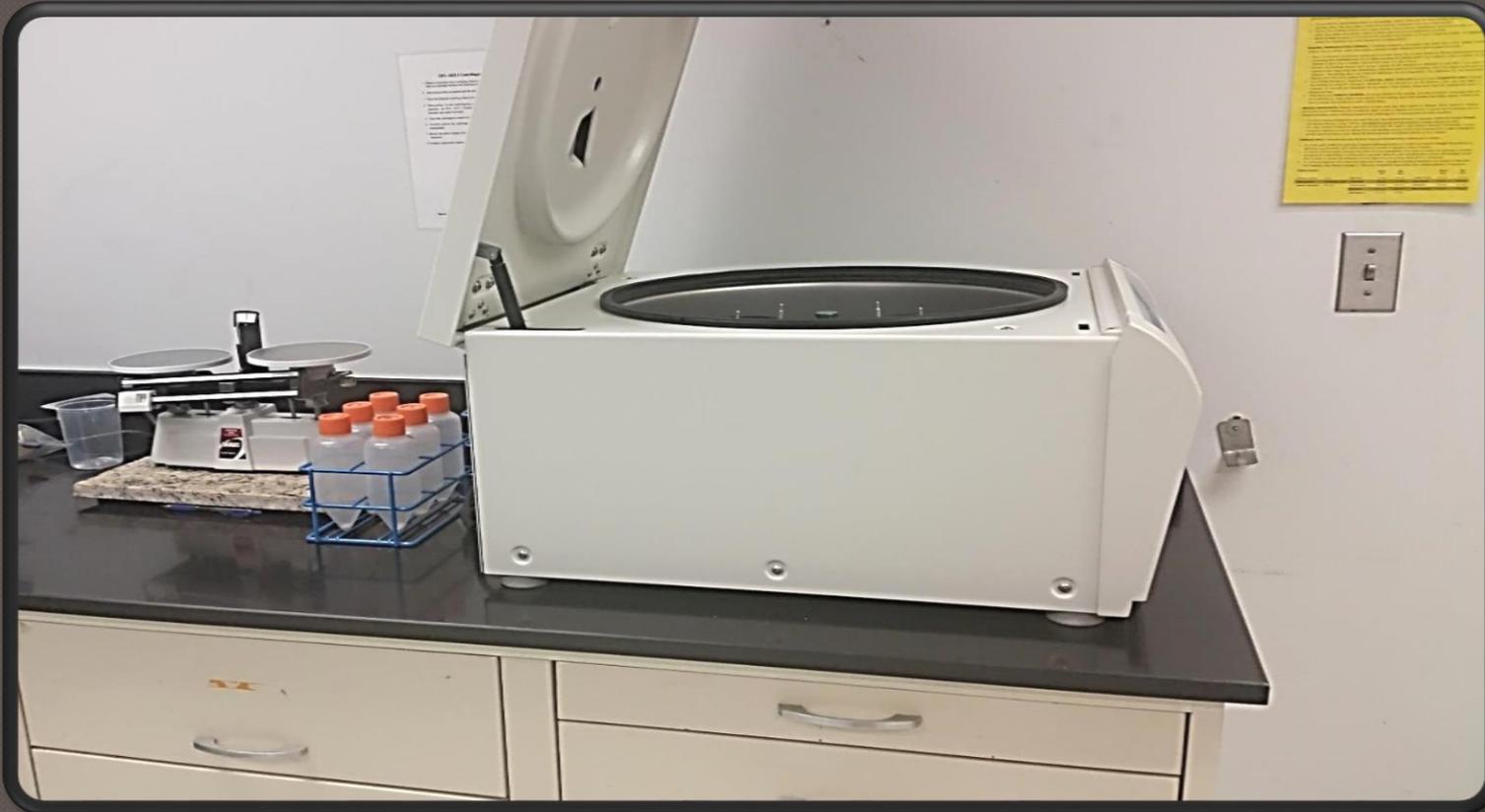
Examination



Filtration

Concentration

Staining



# Method Overview

Collection

Elution

IMS

Examination



Filtration

Concentration

Staining



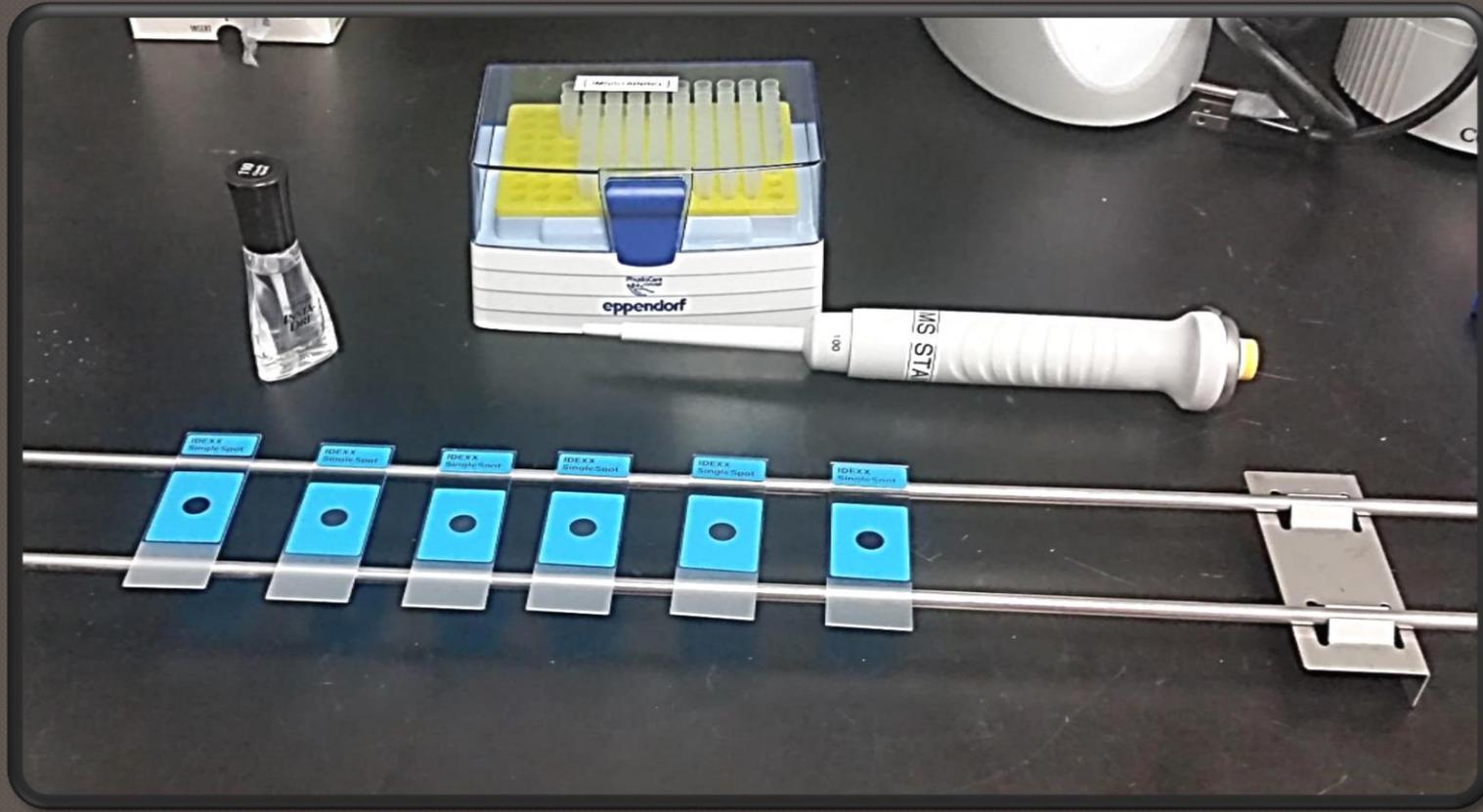
# Method Overview

Collection

Elution

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# Method Overview

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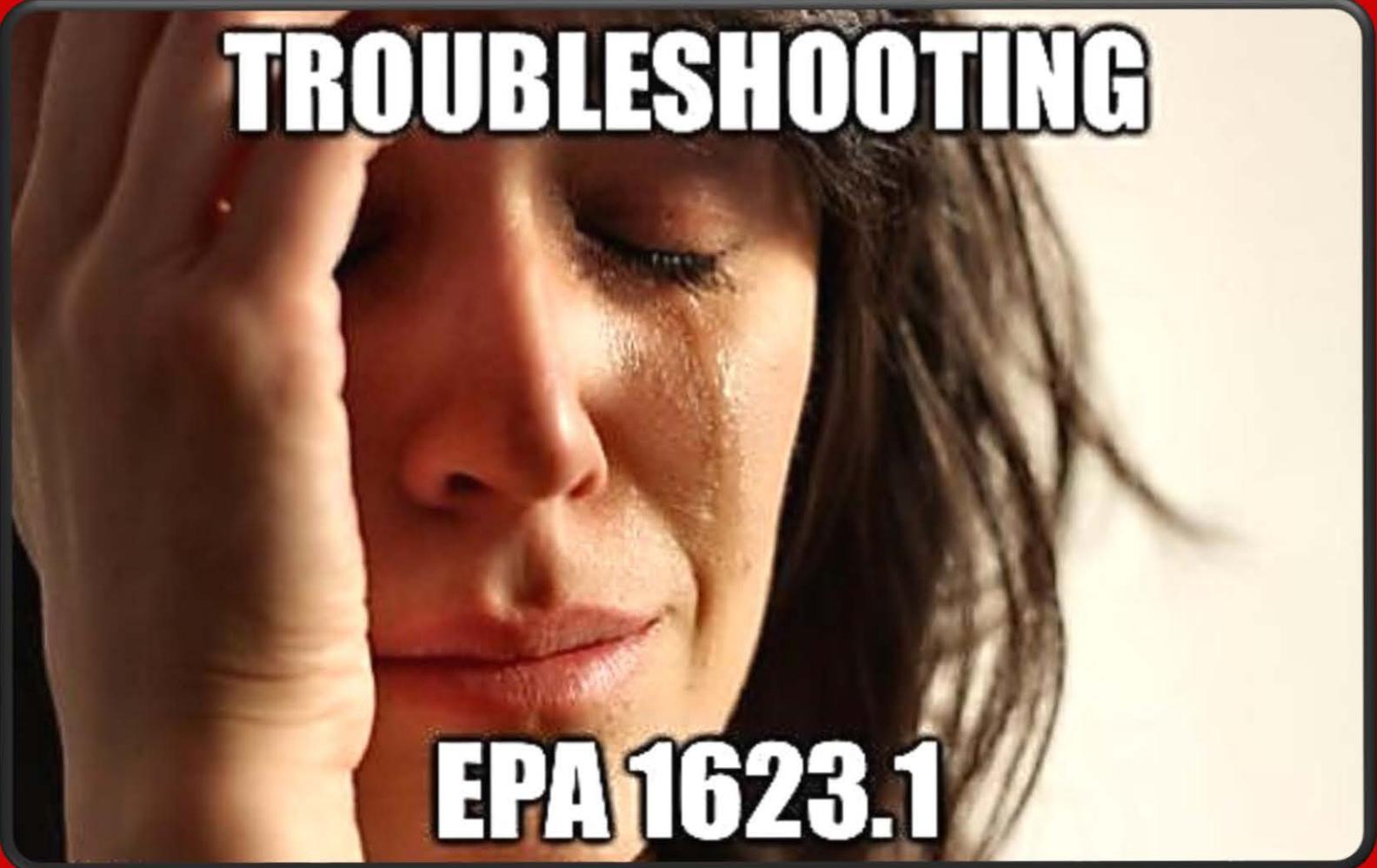


# Method Overview



Method 1622/1623-1 Microscopy Visual Guide





**TROUBLESHOOTING**

**EPA 1623.1**

**PERFORMED EPA 1623.1**



**IT WORKED**

imgflip.com

# Helpful Links

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- **EPA LT2 Information** (Basic Information , LT2 Rule History, LT2 Public Meetings, Compliance Help , Lab Certification for Cryptosporidium):  
<http://water.epa.gov/lawsregs/rulesregs/sdwa/lt2/index.cfm> EPA LT2
- **EPA Cryptosporidium Information** (Laboratory Certification Process, Certified Laboratories, Methods, Federal Register Notices, Recommended Resources, Training Modules, Contact Information):  
[http://water.epa.gov/lawsregs/rulesregs/sdwa/lt2/lab\\_home.cfm](http://water.epa.gov/lawsregs/rulesregs/sdwa/lt2/lab_home.cfm)
- **Cody Danielson**  
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