STATE OF CONNECTICUT DEPARTMENT OF PUBLIC HEALTH
DRINKING WATER SECTION

WHAT TO DO IF COLIFORM BACTERIA ARE DETECTED IN A PWS

Purpose:

To provide public water systems (PWS) with a procedure to follow when Revised Total Coliform Rule (RTCR) or Ground Water Rule (GWR) sample results indicate the presence of total coliform bacteria, E. coli or other fecal indicators. A flow chart is provided as a quick reference tool at the end of this document.

Background and important changes under the RTCR:

The RTCR requirements began on April 1, 2016 and replaced the requirements under the previous Total Coliform Rule (TCR). Some of the significant differences between the rules are listed below:

1. RTCR eliminates the Maximum Contaminant Level (MCL) for total coliforms -The criteria for determining total coliform MCL compliance under the TCR is now a criterion for determining if a treatment technique trigger has been exceeded under the RTCR.
2. RTCR establishes an MCL for E. coli - An acute total coliform violation under the TCR is now an E. coli MCL violation under the RTCR.
3. RTCR establishes Treatment Technique requirements – A treatment technique trigger requires a system to perform a Level 1 or Level 2 Assessment.
4. RTCR requires Level 1 and Level 2 Assessments ("Find and Fix") - Examinations of the distribution system, water sources, treatment facilities, storage facilities and relevant operational practices at a system.
5. RTCR defines a "Sanitary Defect" - A defect that could provide a pathway of entry for microbial contamination into the distribution system or that is indicative of a failure or imminent failure in a barrier that is already in place.
6. RTCR provides allowances for increased and reduced monitoring.
7. RTCR requires seasonal systems to perform start-up procedures prior to opening.

Additional information is provided on the Drinking Water Section's RTCR website (https://www.portal.ct.gov/DPH/Drinking-Water/DWS/Revised-Total-Coliform-Rule-RTCR).

References:

eRegulations - Browse Regulations of Connecticut State Agencies - RTCR
eRegulations - Browse Regulations of Connecticut State Agencies - GWR

Drinking Water Section (DWS) Contact Information:

- DWS phone number during normal business hours (8:30–4:30): **860-509-7333**
- DPH after-hours emergency phone number: **860-509-8000**
- DWS Website: https://www.portal.ct.gov/DPH/Drinking-Water/DWS/Drinking-Water-Section

Local Health Department (LHD) Contact Information:

https://portal.ct.gov/dph/about/ohla/find-your-lhd?language=en_US

WHAT TO DO IF COLIFORM BACTERIA ARE DETECTED IN A PWS

WHAT TO DO IF A ROUTINE RTCR SAMPLE IS TOTAL COLIFORM-POSITIVE

1. If a routine sample is total coliform-positive, the sample must be further analyzed for E. coli. If the routine total coliform-positive sample is also E. coli-positive, the PWS must notify the DWS immediately but not later than the end of the day on which the PWS is notified of the E. coli-positive result. **Do not leave a voice mail message.** If the DWS is closed, notification must be made using the DPH after-hours phone number.
2. A PWS must collect three (3) repeat samples for every routine total coliform-positive sample. Repeat samples must be collected within 24 hours of the confirmed routine total coliform-positive sample result. The 24 hour time limit may be extended to no more than 96 hours provided the PWS verifies that the laboratory is closed for the weekend or holidays or the sample sites are unavailable. **This extension must be requested and granted before the original 24 hour period expires.**

   Revised Total Coliform Rule Sample Site Location Requirements
   - One repeat sample must be collected from the sampling tap where the original total coliform-positive sample was collected.
   - One repeat sample must be collected from a sampling tap within 5 service connections upstream of the original sampling site as outlined in the system's sampling plan.
   - One repeat sample must be collected from a sampling tap within 5 service connections downstream of the original sampling site as outlined in the system's sampling plan.

3. Under the GWR, a PWS must collect triggered source water samples within 24 hours of each routine RTCR positive sample and have the samples analyzed for E. coli unless the PWS has a DWS approved 4-log virus treatment system installed and in operation. A triggered source water sample must be collected from each active source of supply "in use" at the time that each positive routine RTCR sample was collected. "In use" means when water from an active source of supply is, or could possibly be, at the monitoring site at the time of routine RTCR sample collection. In order to avoid possible monitoring violations, the water system is responsible for notifying the DWS if an active source is not "in use" at the time when the positive routine RTCR sample was collected.
4. If any triggered source water sample is positive for E. coli, five (5) additional source water samples must be collected and analyzed for E. coli. If any triggered source water sample is positive for total coliform but negative for E. coli, no additional monitoring is required under the Ground Water Rule for that source. **Disinfection measures must not be undertaken until all triggered and additional source water samples (if needed) are collected in order to avoid monitoring violations.** Each groundwater source of supply must have a dedicated sample tap installed prior to any storage or treatment facility. Additional guidance on complying with the triggered source water monitoring requirements and other components of the GWR is available on the DWS website.
5. It is recommended that a PWS collect investigatory total coliform samples after each treatment unit and from each storage facility to determine if the source of bacteria is originating from these facilities. Some of these facilities may not have dedicated sample taps, therefore, investigatory samples should be collected as close to the facility as possible, and prior to disinfection or other interim measures. Samples collected as part of any investigation should be labeled as "special samples" and are not used for compliance purposes.
6. A consecutive PWS that has a total coliform-positive sample collected under the RTCR must notify the wholesale PWS(s) within 24 hours of becoming aware of the total coliform-positive sample.
7. A wholesale ground water PWS that receives notice from a consecutive PWS it serves, that a sample collected under the RTCR is total coliform-positive must, within 24 hours of being notified, collect triggered samples from its ground water sources for E.coli analysis.
8. A PWS that is monitoring on a quarterly frequency must temporarily increase routine RTCR monitoring to three (3) routine samples in the month following the routine total coliform-positive.

WHAT TO DO IF COLIFORM BACTERIA ARE DETECTED IN A PWS

WHAT TO DO FOLLOWING RTCR REPEAT SAMPLING

If all repeat samples were collected and are absent for total coliforms:

1. Determine if a treatment technique trigger has been exceeded if multiple routine samples were total coliform-positive during the month.
2. No further action is required under RTCR if only one routine sample was total coliform-positive during the month.

If all repeat samples were not collected, determine if an E. coli MCL violation exists and review the RTCR Treatment Technique Triggers.

E. Coli MCL violation:

A system has an E. coli MCL violation when any of the following conditions occur:

- The system has an E. coli-positive repeat sample following a total coliform-positive routine sample.
- The system has an E. coli-positive repeat sample following an E. coli-positive routine sample.
- The system has a total coliform-positive repeat sample following an E. coli-positive routine sample.
- The system fails to take all required repeat samples following an E. coli-positive routine sample.
- The system fails to test for E. coli when any repeat sample is total coliform-positive.

1. **The system must notify DWS and the LHD as soon as practical but no later than 24 hours after the system learns of the E. coli MCL violation.**
   - During week day business hours (8:00 a.m. to 4:30 p.m.): Contact the DWS office at 860-509-7333
   - Request to speak directly with a member of the DWS staff. **Do not leave a voice mail message.**
   - During non-business hours call the DPH after-hours emergency number (860-509-8000) to report the E. coli MCL violation and follow-up with the DWS during the next business day.
   - Email notification is not acceptable at any time.
2. The system must notify its customers in accordance with Section 19-13-B102(i)(1)(A) of the RCSA as soon as practical but no later than 24 hours after the PWS learns of the violation. The DWS can provide a public notification template upon consultation. Templates are also available on the DWS website.
3. The system must perform a Level 2 Assessment.
4. The system must implement interim measures as directed by the DWS per the *Interim Measures Standard Operating Procedure*, which is available on the DWS website.
5. The system should follow up notification to DWS and LHD with a *Public Water System Notification Form To Confirm Compliance With Sections 19-13-B46 & 19-13-B102 Of The Regulations of Connecticut State Agencies (RCSA)*. This form is available on the DWS website and should be submitted no later than the end of the following business day after notification to DWS and LHD has occurred.
6. After all required triggered and additional ground water source monitoring is conducted per the GWR as noted earlier, the groundwater system should disinfect the water system in accordance with *Disinfection of a Well Water Supply* guidance document located on DWS website. A system that normally does not continuously chlorinate water should notify its customers in advance that the system will be chlorinated and why the system is being chlorinated.
7. A system that already disinfects continuously should assess the distribution system to determine if chlorine residuals are being maintained throughout the distribution system. A minimum free chlorine residual of at least 0.2 mg/l should be maintained at the extremities of the distribution system. Flushing and/or increase in chlorine dosage may be necessary depending on the assessment.
8. The system should collect special (non-compliance) samples after the chlorine has dissipated or returned to normal levels to confirm the effectiveness of the disinfection procedure. Repeat the disinfection procedure as necessary.

WHAT TO DO IF COLIFORM BACTERIA ARE DETECTED IN A PWS

RTCR Treatment Technique Triggers:

Level 1 Assessments:

A Level 1 Assessment is a basic examination of the distribution system, water sources, treatment facilities, storage facilities and relevant operational practices at a public water system (PWS). A Level 1 Assessment helps to identify possible sanitary defects that may have triggered the assessment. It is intended as a self-assessment and may be performed by the PWS owner or operator.

A system must conduct a Level 1 Assessment after exceeding any of the following treatment technique triggers:

- For a PWS taking fewer than 40 samples per month, two or more samples are total coliform-positive in the same month.
- For a PWS taking 40 or more samples per month, more than 5.0 percent of the samples taken are total coliform-positive.
- The PWS fails to take every required repeat sample after any single routine total coliform-positive sample.

A completed Revised Total Coliform Rule Level 1 Assessment Form must be submitted to the Department no later than 30 days after the date that the PWS learns that a treatment technique trigger has been exceeded (Assessment Trigger Date). Note: Two Level 1 triggers within a rolling 12-month period is a Level 2 Assessment Trigger.

Level 2 Assessments:

A Level 2 Assessment is a more in-depth examination of the distribution system, water sources, treatment facilities, storage facilities and relevant operational practices at a public water system (PWS). A Level 2 Assessment helps to identify possible sanitary defects that may have the triggered assessment. Level 2 Assessments must be performed by a qualified Level 2 Assessor. It is the water system's responsibility to ensure that the Level 2 Assessment is completed. If the Department elects to conduct the Level 2 Assessment, the PWS will be notified not later than 5 days after the PWS learns that it has exceeded a Level 2 treatment technique trigger. A list of qualified CT DPH RTCR Level 2 Assessors is available on the DWS website.

A system must conduct a Level 2 Assessment after exceeding any of the following treatment technique triggers:

- An E. coli MCL Violation
- System has triggered 2 or more Level 1 assessments in a rolling 12-month period (unless the DWS has determined that the system found and fixed sanitary defects discovered in the previous Level 1 Assessment(s))

A completed Revised Total Coliform Rule Level 2 Assessment Form must be submitted to the Department no later than 30 days after the date that the PWS learns that a treatment technique trigger has been exceeded (Assessment Trigger Date).

STATE OF CONNECTICUT DEPARTMENT OF PUBLIC HEALTH
DRINKING WATER SECTION

WHAT TO DO IF COLIFORM BACTERIA ARE DETECTED IN A PWS

WHAT TO DO FOLLOWING GWR TRIGGERED OR ASSESSMENT MONITORING SAMPLING

If all GWR Triggered or Assessment monitoring samples are E.coli-negative:

No further action is required under the GWR.

If any GWR Triggered or Assessment monitoring sample is positive for E.coli:

1. Notify DWS as soon as practical after the system learns of the E. coli result.
   - During week day business hours (8:00 a.m. to 4:30 p.m.): Contact the DWS office at 860-509-7333
   - Request to speak directly with a member of the DWS compliance staff. **Do not leave a voice mail message.**
2. A Tier 1 public notification is required. A system with a ground water source sample that is E.coli-positive must issue a Tier 1 public notice as soon as practical but no later than twenty-four (24) hours of learning of the results.
3. If the E.coli-positive triggered ground water source sample is not invalidated and DWS does not require immediate corrective action, the PWS must collect five (5) **additional** ground water source samples from the same source within twenty-four (24) hours of being notified of the E. coli positive sample prior to disinfection or other interim measures.
4. If the five **additional** samples are not collected, the system must follow the instructions for corrective action below.

If all additional GWR monitoring samples are E.coli-negative:

No further action is required under the GWR.

If any additional GWR monitoring sample is positive for E.coli:

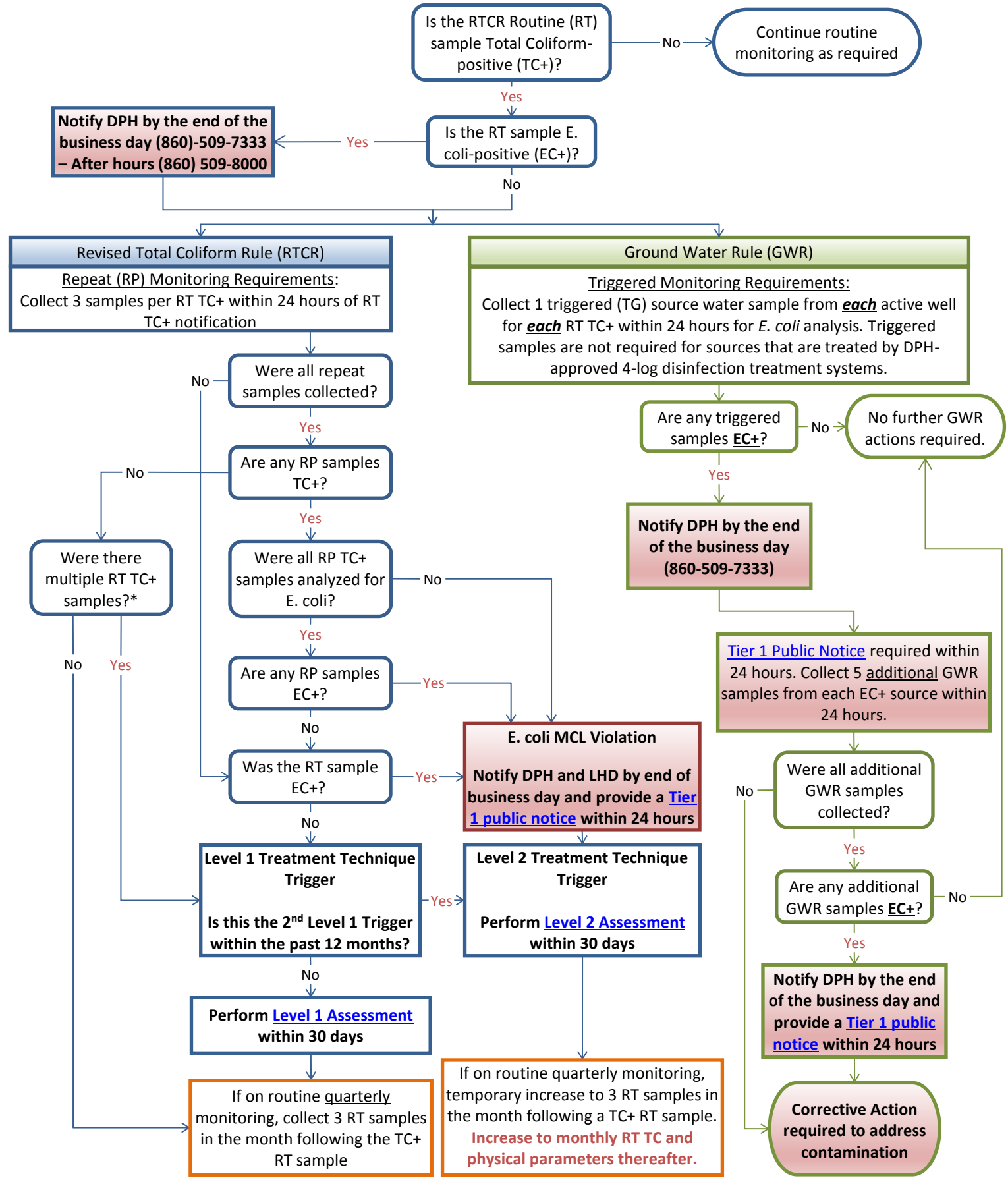
1. Notify the DWS as soon as practical after the system learns of the E. coli result.
   - During week day business hours (8:30 a.m. to 4:30 p.m.): Contact the DWS office at 860-509-7333
   - Request to speak directly with a member of the DWS staff. **Do not leave a voice mail message.**
   - Email notification is not acceptable at any time.
2. An additional Tier 1 public notification is required. A system with an additional ground water source sample that is E.coli-positive must issue a Tier 1 public notice as soon as practical but no later than twenty-four (24) hours of learning of the results.
3. The system must follow the instructions for corrective action below.

Instructions for Corrective Action following an E. coli-positive source water sample

1. The system must implement one of the following corrective actions:
   a. Correct all significant deficiencies;
   b. Provide an alternate source of water;
   c. Eliminate the source of contamination; or
   d. Provide treatment that reliably achieves at least 4-log (99.99 percent) treatment of viruses using inactivation, removal, or a department-approved combination of 4-log virus inactivation and removal before or at the first consumer for the ground water source.
2. Not later than 30 days of learning of the E. coli-positive results, the system must consult with the DWS regarding the appropriate corrective action unless the DWS directs the system to implement a specific corrective action.
3. Not later than 60 days of learning of the E. coli-positive results, the system must submit an application to the DWS requesting approval of the corrective action and a proposed schedule for completing the action.
4. Not later than 120 days of learning of the E. coli-positive results, the system shall either have completed the approved corrective action or be in compliance with an approved corrective action plan.

STATE OF CONNECTICUT DEPARTMENT OF PUBLIC HEALTH
DRINKING WATER SECTION

WHAT TO DO IF COLIFORM BACTERIA ARE DETECTED IN A PWS



For water systems that collect 40 or more samples per month, if more than five percent (5.0%) of the samples collected during a month are total coliform positive, the system has triggered a Level 1 Treatment Technique.