

»» Agricultural Water – Production

Safe production water is very important for farm food safety. Production water is used for such things as irrigation, application of pesticides, and frost protection. Pathogens in production water can contaminate growing produce.



The FDA is exploring ways to simplify the microbial quality and testing requirements for agricultural water established in the *Produce Safety Rule* while still protecting public health. Once changes are announced, you will receive an updated information sheet. For now, we strongly recommend that you continue regular laboratory testing.

Inspect agricultural water sources and water distribution systems

Water can be contaminated at the source or in the distribution system, so you must:

- Inspect water sources and distribution systems at least yearly.
- Keep water sources free of debris, trash, domesticated animals and other hazards.

Evaluate water quality using microbial water quality profiles

Testing is the only way to evaluate the microbial quality of water quantitatively. The FDA has selected generic *E. coli* as the target indicator species. The water quality profile can help you:

- Understand the long-term quality of source water.
- Understand appropriate uses for each source.
- Determine if corrective measures are needed when microbial water quality exceeds the numerical criteria established in the *Produce Safety Rule*.

Test quality of water used during growing activities

- You must test water used in direct water application to covered produce.

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- You must test each source of production water to evaluate whether its water quality profile meets **both** of these criteria:
 - » **126 or less** colony forming units (CFU) of generic *E. coli* per 100 milliliters (mL) of water geometric mean, **and**
 - » **410 or less** CFU of generic *E. coli* per 100 mL of water statistical threshold value.

For a tool to help calculate the geometric mean and statistical threshold value, go to wcfs.ucdavis.edu.

Follow correct sampling frequency

- **Public water sources:** No testing required if you can provide a copy of test results or current certificates of compliance from your public water provider
- **Ground water sources:**
 - » Initial year: Take four samples throughout the growing season or in one year.
 - » Subsequent years: Take one sample during the growing season.
 - » Samples must be representative of use and collected as close in time as practicable to, but before, harvest.
- **Surface water sources:**
 - » Collect an initial water quality profile of 20 samples over a period of two to four years.
 - » Subsequent years: Take five samples during the growing season.
 - » Samples must be representative of use and must be collected as close in time as practicable to, but before, harvest.

Take any one of these three corrective actions if the microbial water quality profile does not meet the water quality criteria

1. Apply a time interval for microbial die off:
 - a. Between last application of water and harvest – FDA allows a microbial die-off rate of 0.5 log per day between last application and harvest for up to four consecutive days.

Example: If the geometric mean of your water profile is 156
 Rule: Geometric mean is equal to or less than 126
 $\text{Log}_{10} 126 = 2.1$
 $\text{Log}_{10} 156 = 2.2$
 $2.2 - 2.1 = 0.1$ log reduction needed. Achieve with a one-day pre-harvest interval or conduct a validated procedure such as washing.

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- b. Between harvest and end of storage and/or removal during activities such as commercial washing
- 2. Re-inspect the water system, identify problems, make necessary changes, and confirm effectiveness.
- 3. Treat the water.

Treat production water

- There are no EPA-registered chemicals for antimicrobial treatment of water used on crops during growth. FDA is working with EPA to register appropriate chemical treatments.
- Non-chemical treatments called “pesticide devices” by EPA, including filter units, ultraviolet lights, and ozonator units, may be used if they adequately reduce microbial risks.
- Avoid water treatments that may have negative environmental and soil quality impacts.
- Keep records of all water treatment monitoring that you conduct.

Keep records

Required

Findings of the water system inspection

Corrective measures taken, if any

Water quality test results

Recommended

Monitoring of water treatments

Scientific data or information to support compliance including treatment, calculations, and testing

Scientific data or information to support alternative indicators, criteria, or sampling frequency



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