Testing water for microbial safety

For drinking and hand washing, only potable water should be used (drinking water standard).

For post-harvest uses, water should be either from a tested source (potable) or treated according to an accepted protocol. For more information on post-harvest uses see UC publications:

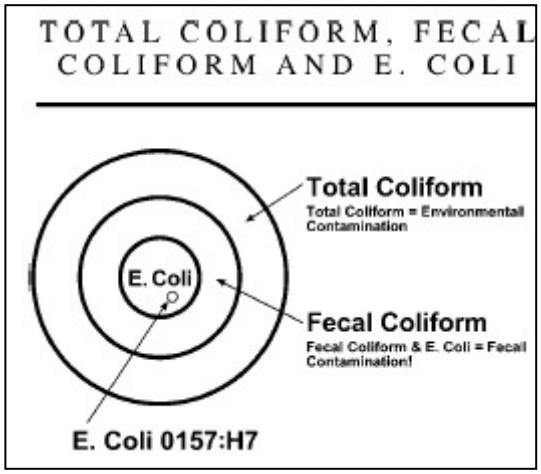
- Postharvest chlorination: http://ucfoodsafety.ucdavis.edu/files/26414.pdf
- Water disinfection: http://anrcatalog.ucdavis.edu/pdf/7256.pdf

For irrigation, dust control, and foliar sprays, water should be tested regularly to characterize its microbial safety. Suggestions are to test well water annually and surface water quarterly, beginning at the start of the irrigation season. How do you interpret the test results; what is a "passing score"? Unless you are part of a commodity quality assurance program which dictates a threshold, it is up to you to choose a water quality standard, taking into consideration the use of the water, for example whether the water is in contact with edible portions of the crop or not, and how close to harvest the water contacts the product.

First, a little background to help you understand microbial water test results. Total coliform, fecal coliform and generic *E. coli* do not cause disease, they are simply indicator organisms which tell us when water might be contaminated and therefore might possibly contain pathogens such as *E. coli* O157:H7.

Total coliform are normally present in the environment (soil and vegetation); their presence in well-water is an indicator that the well may be compromised in some way.

Fecal coliform and **generic *E. coli*** are indicative of fecal contamination. A low level is normal in surface waters, but higher levels may indicate a problem that needs to be resolved.



from Washington State Department of Health

Bacterial levels are reported as either MPN (most probable number) or CFU (colony forming units), these are equivalent. Despite the functional significance of *E. coli* as an indicator, there are **no established or recognized limits or standards**, at this time. In other words, we can't provide you with a single number against which you can judge your water test results. The best available standards that might be applied to surface irrigation water quality are those established by the U.S. Environmental Protection Agency for recreational waters (EPA-823-R-03-008 revised June 2003, see http://water.epa.gov/type/oceb/beaches/local_index.cfm). This EPA recreational water quality standard requires less than 126 MPN (or CFU) of generic *E. coli* per 100 ml water.

For well water, some guidelines use 2.2 MPN total coliform per 100 ml water as a threshold above which the well should be treated. For well water, a presence/absence test is sufficient, in this case it should test negative.

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