



Water Quality Considerations for Arizona Agriculture

Channah Rock, PhD
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Understanding impacts of new Agricultural Water metrics for producers.



MENU

CDC A-Z



SEARCH

E.coli (*Escherichia coli*)

[CDC](#) > [E.coli Homepage](#) > [Outbreaks](#) > [2018 Outbreaks](#)

Multistate Outbreak of *E. coli* O157:H7 Infections Linked to Romaine Lettuce (Final Update)



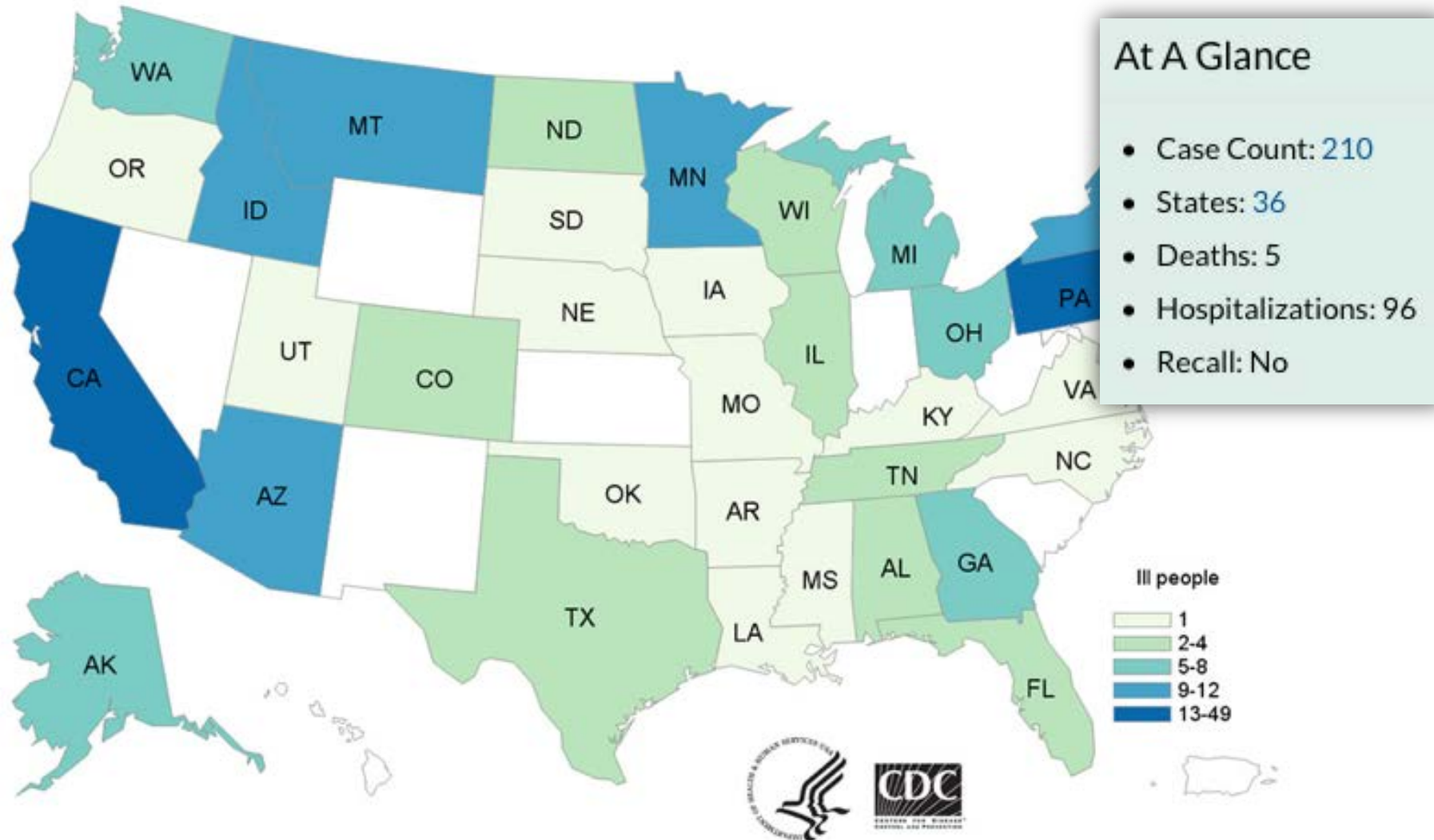
Language:

- [E. coli O157:H7 Infections Linked to Romaine Lettuce en Español](#)
- [Advice to Consumers, Restaurants, Retailers, and Clinicians](#)
- [Case Count Maps](#)
- [Epi Curves](#)
- [Signs & Symptoms](#)
- [Key Resources](#)

Posted June 28, 2018 3:30 PM EST

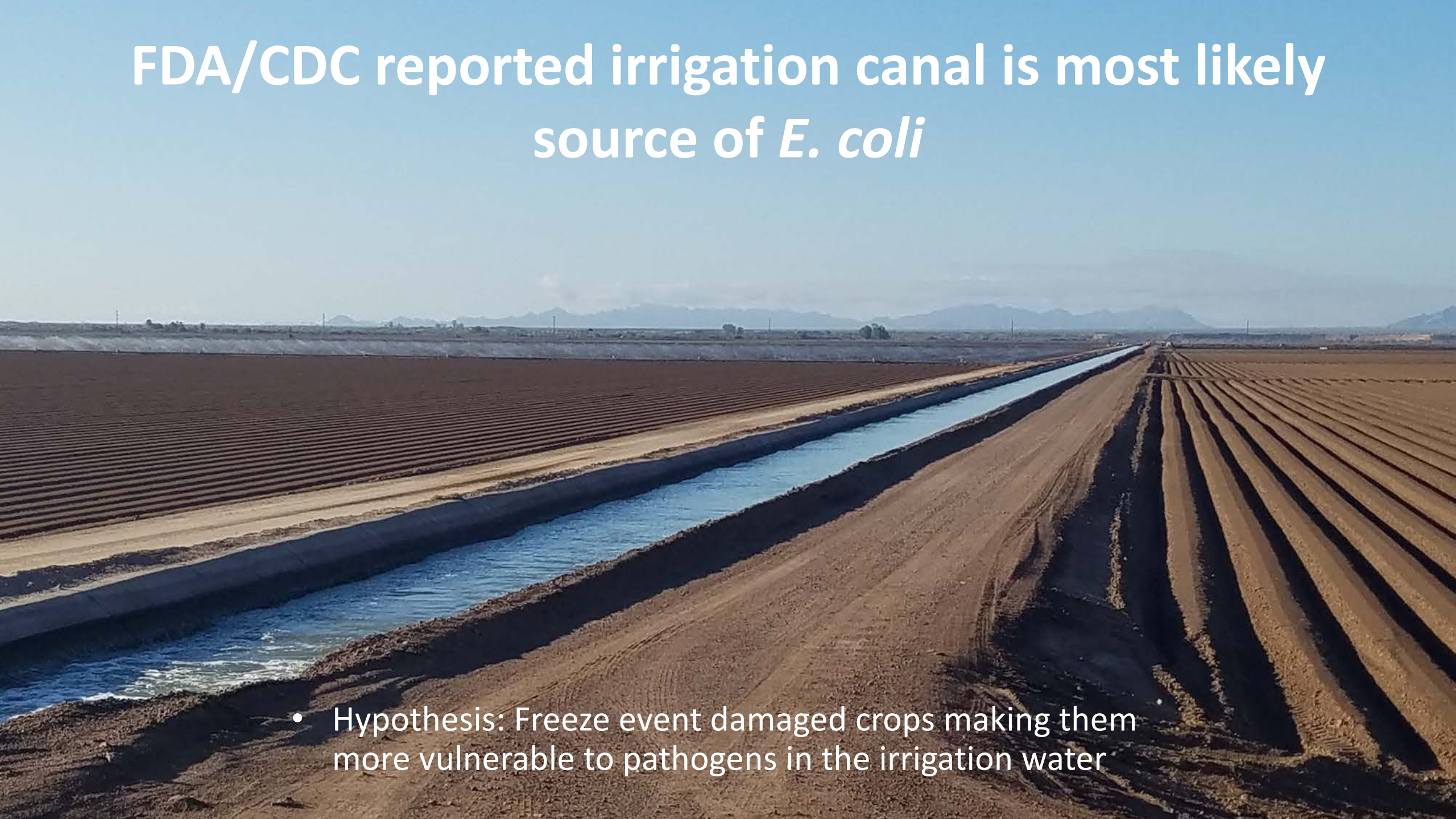
This outbreak appears to be over. *E. coli* is an important cause of illness in the United States. More information about *E. coli*, and steps people can take to reduce their risk of infection, can be found on the [E. coli and Food Safety web](#)

People infected with the outbreak strain of *E. coli* O157:H7, by state of residence, as of June 27, 2018 (n=210)



FDA/CDC reported irrigation canal is most likely source of *E. coli*

- Hypothesis: Freeze event damaged crops making them more vulnerable to pathogens in the irrigation water



LGMA and FSMA

- 2007 California and Arizona Leafy Green Marketing Agreements
 - Growers came together → raise the bar on food safety
 - Agricultural waters need to be assessed for acceptable quality
- 2013 FSMA (Food Safety Modernization Act) Regulations
 - Standards for Growing, Harvesting, Packing and Holding Produce
 - 126 *E. coli* / 100 mL Geometric Mean (GM)
 - 410 *E. coli* / 100 mL Statistical Threshold Value (STV)



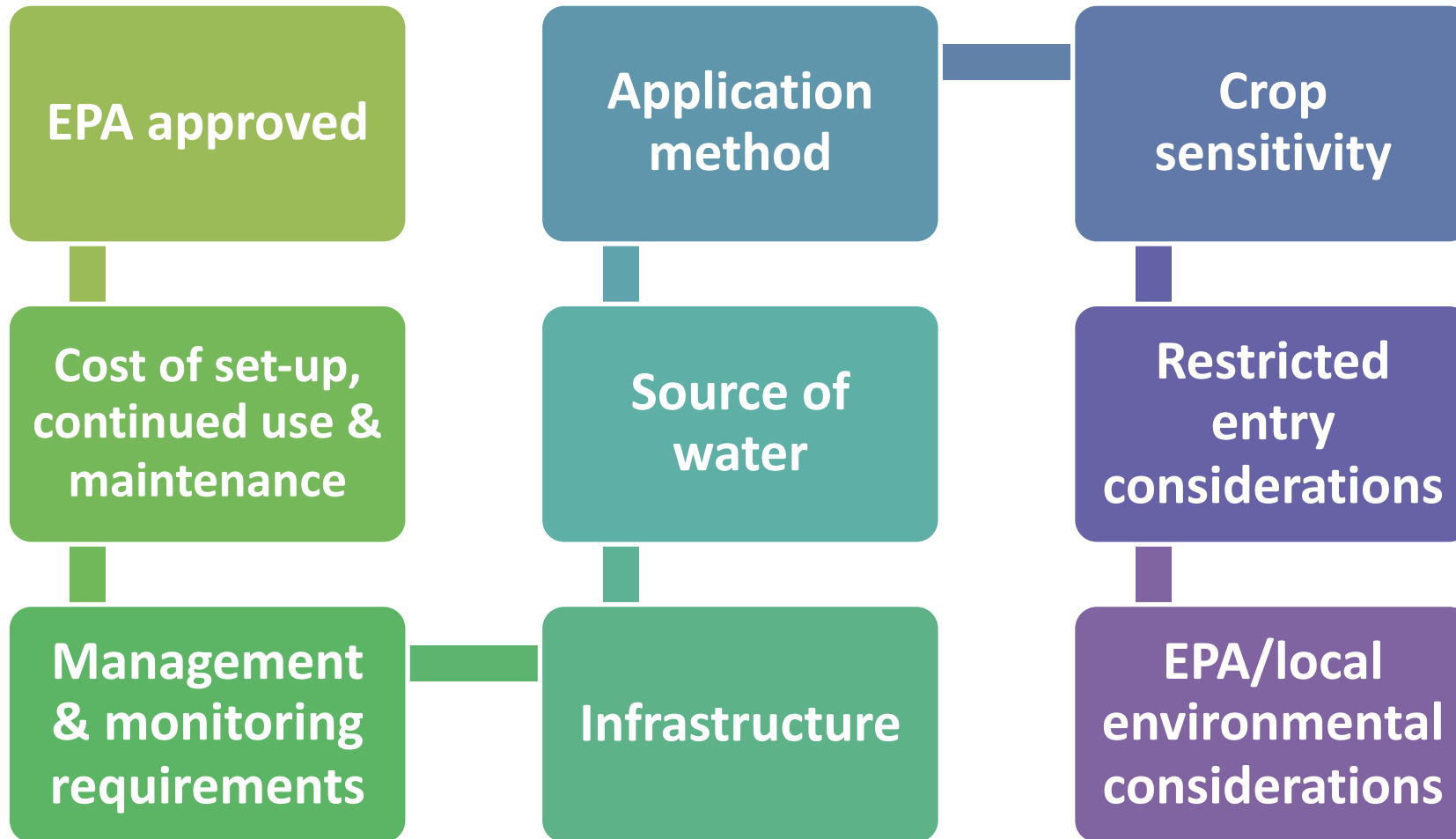
Water as a Food Safety Issue

- Metrics are intended to prioritize risk by classifying agricultural water systems for specific uses
- Find & Fix structure to identify and correct ag water system nonconformities and more serious failures.
- Metrics should be considered the minimum controls necessary to assess agricultural water systems for fitness of use.

New Water Metrics for AZ Agriculture

- Approved April 18th, 2019
- Type A (groundwater, municipal) or Type B (surface)
- < 21 days to harvest & overhead irrigation
- Non-detect generic *E. coli*
- Water should be treated with EPA approved sanitizers in accordance with label specifications, guidelines for use and consideration of environmental impacts.

Agricultural Water Treatment is Complex



Commonly Used Water Treatment Chemicals or Devices

- **Physical (Pesticide device)**
 - Heat Sterilization
 - Ultra Violet Light (UV)
 - Filtration (Membrane, or other media)
 - Ozone generator
- **Chemical**
 - Peroxyacetic Acid (PAA)
 - Sodium Hypochlorite / Chlorine Dioxide / Chlorine Gas
 - Sodium or Calcium Hypochlorite
 - Copper / Silver Ionization
 - Bromine



Example: Chemical Disinfection

- Disinfectants/Sanitizers do not kill instantaneously on contact. The rate of inactivation depends on 5 factors:
 1. The Pathogens/Indicators
 2. Chemical Concentration, C (mg/l)
 3. Contact Time, T (minutes)
 4. Temperature of water
 5. pH of water

A grower is now...

- Agronomist
- Entomologist
- Climatologist
- Soil Scientist
- Microbiologist

and a....



Water Treatment Operator