

Juice HACCP Today: Updates, Exemptions, and Ensuring Valid Training

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Anyone inspecting juice operations?

What is “juice”?



There's a definition for that!

According to 21 CFR § 120.1(a), “juice” means...

“the aqueous liquid expressed or extracted from one or more fruits or vegetables, purees of the edible portions of one or more fruits or vegetables, or any concentrates of such liquid or puree”

...that sounds easy...

Why do we care?

- Rise in raw juice and cold-pressed beverage sales across the Southeast
- Time component added for direct-to-consumer orders
 - Retail exemption?
- Juice HACCP has not been updated since 2002!
- Juice sales projected to grow by ~9.1% by 2033¹

North America Cold Pressed Juices Market	Market Overview				
Market Size in USD Million	<table><tr><td>Study Period</td><td>2021 - 2031</td></tr><tr><td>Forecast Data Period</td><td>2026 - 2031</td></tr></table>	Study Period	2021 - 2031	Forecast Data Period	2026 - 2031
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USD 894.76 M

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Juice HACCP exists because a lot of people got sick

TABLE 1. *Reported number of cases, hospitalizations, and deaths by causative agent(s) for juice-associated outbreaks reported to the CDC, 1995 through 2005*

Agent	No. of outbreaks	No. of illnesses	No. of hospitalizations	No. of deaths
<i>Salmonella</i>	5	710	94	
<i>E. coli</i> O157:H7	5	105	36	1
<i>Cryptosporidium parvum</i>	2	175	3	
<i>E. coli</i> O111 and <i>C. parvum</i>	1	213	15	
Unknown	8	182	1	
Total	21	1,366	149	1

- Requires juice to be treated to achieve pathogen log reduction of at least 5 log (99.999%)
- Procedures to do this should be validated
- Exempt if retail

Juice without a kill step

Raw juice

- Spinning blades to macerate the juice and zero heat



Cold-pressed juice

- Macerating in hopper; pressing between panels; no heat



Non-thermal pasteurization methods validation to achieve 5-log reduction

- High Pressure Processing (HPP)
- Ultraviolet (UV-C)
- Pulsed Electric Field (PEF)
- Microfiltration

It's important to remember that these technologies have not been validated for all pathogens of concern in all types of juices

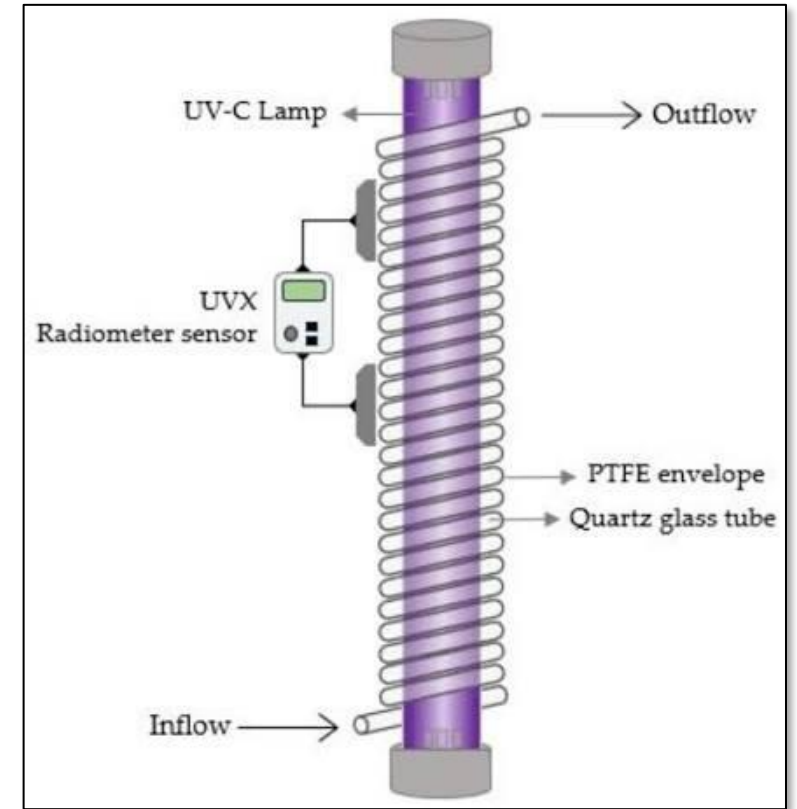
High Pressure Processing (HPP)

- Kills pathogens with pressure
 - Struggles with spores and typically still requires refrigeration to delay spoilage
- Documentation you may look for at CCPs
 - Batch/Lot
 - Pressure
 - Temperature
 - Time (dwell)



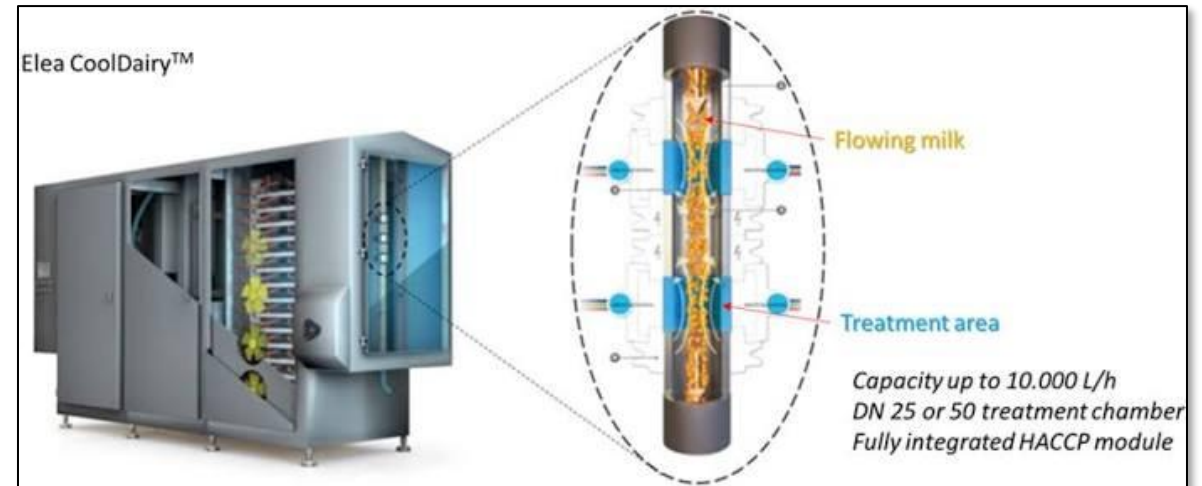
Ultraviolet (UV-C)

- Kills pathogens with short-wave (200-280 nm) ultraviolet light that penetrates product and cells
 - Bulb life measured in hours
 - Introduces a glass hazard into the facility
- Documentation you may look for at CCPs
 - Light is ON and operating
 - Flow rate
 - Turbidity*



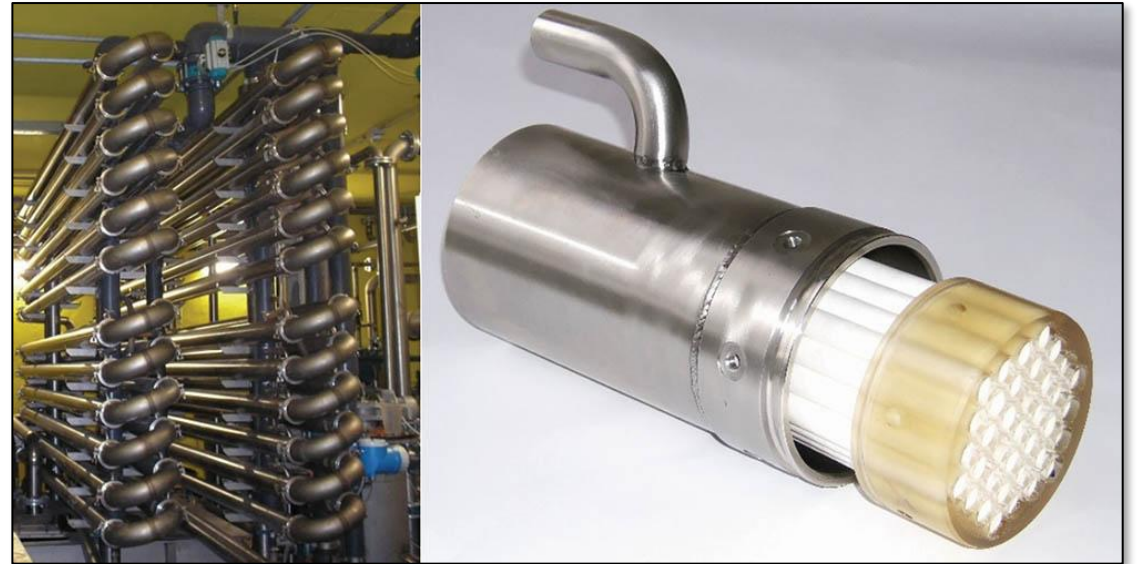
Pulsed Electric Field (PEF)

- Kills pathogens by sending high-voltage electric currents in short pulses through the food to create and/or enlarge pores in microorganisms (leakage)
- Documentation you may look for at CCPs
 - Flow rate
 - Electrical conductivity
 - *Many* others



Microfiltration

- Removes pathogens by pushing juice through a filter (0.1-0.2 microns) that is too small for pathogens to pass through
- Documentation you may look for at CCPs
 - Batch/Lot
 - Pretreatment parameters
 - Pore (of appropriate size) in place
 - Pressure
 - Flow rate



HACCP requires training

- Must be Juice HACCP [21 CFR § 120.13(b)]
 - Or experience

§ 120.13 Training.

- (b) The individual performing the functions listed in paragraph (a) of this section shall have successfully completed training in the application of HACCP principles to juice processing at least equivalent to that received under standardized curriculum recognized as adequate by the Food and Drug Administration, or shall be otherwise qualified through job experience to perform these functions. Job experience may qualify an individual to perform these functions if such experience has provided knowledge at least equivalent to that provided through the standardized curriculum. The trained individual need not be an employee of the processor.

Why do we care about valid training?

- Because only a valid **Juice HACCP**-trained individual can perform the following required activities:
 - Develop the hazard analysis
 - Develop the HACCP plan
 - Verify and modify the HACCP plan
 - Perform record review

HACCP needs updating

- A group of individuals across at least 10 institutions think we need to update the training curriculum to reflect the diversity of juice products, operations, and production methods used today
- If you are interested in supporting this work (passively or actively), please scan the QR code and fill out the form

Scan or click QR code



Retail exemptions

- *“Retail establishments or businesses that make and sell juice directly to consumers and do not sell or distribute juice to other businesses are exempt from the juice HACCP regulation, but must comply with FDA's food labeling regulation in 21 CFR 101.17(g) that requires a warning statement on packaged fruit and vegetable juice products that have not been processed to prevent, reduce, or eliminate pathogenic microorganisms that may be present, and with any applicable state regulations.”*

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New course for retail exemptions

- Even though a producer may fall under the retail exemption for Juice HACCP, their state and/or specific farmers' market may not allow them to sell unpasteurized juice
 - Varies from state to state, so we are putting together a course to help producers understand (launching Summer 2027)
- If you are interested in supporting this work (passively or actively), please scan the QR code and fill out the form

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What are we working on next?

Scan or click QR code



Juice HACCP
2.0

Scan or click QR code



Retail
exemptions

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Is THIS juice?

Thank you!



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