

# TCS or Not? You Make the Call!

AFDO Inspector Boot Camp



- <https://www.youtube.com/watch?v=gtd8CqAQ90>



# Goal Line

Identifying Time/Temperature Control for Safety Food (TCS)



# Program

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- Review Time/Temperature control for safety food (TCS Food) definition
- Review TCS Food tools
- Review the relative Risk of Various TCS Foods
- TCS Food or Not voting and discussion



# TCS Food - Definition

**Time/Temperature Control for Safety Food**  
(formerly “potentially hazardous food” (PHF)).

(1) **"Time/temperature control for safety food"**  
means a FOOD that requires time/temperature control for safety (TCS) to limit pathogenic microorganism growth or toxin formation.



# TCS Food - Definition

(2) **"Time/temperature control for safety food"** includes:

(a) An animal FOOD that is raw or heat-treated; a plant FOOD that is heat-treated or consists of raw seed sprouts, cut melons, cut leafy greens, cut tomatoes or mixtures of cut tomatoes that are not modified in a way so that they are unable to support pathogenic microorganism growth or toxin formation, or garlic-in-oil mixtures that are not modified in a way so that they are unable to support pathogenic microorganism growth or toxin formation; and



# TCS Food - Definition

(2) **"Time/temperature control for safety food"** includes:

(b) Except as specified in Subparagraph (3)(d) of this definition, a FOOD that because of the interaction of its AW and PH values is designated as Product Assessment Required (PA) in Table A or B of this definition:





**Table A. Interaction of pH and  $A_w$  for control of spores in FOOD heat-treated to destroy vegetative cells and subsequently PACKAGED**

$A_w$ values	pH: 4.6 or less	pH: > 4.6 - 5.6	pH: > 5.6
$\leq 0.92$	non-TCS FOOD*	non-TCS FOOD	non-TCS FOOD
> 0.92 - 0.95	non-TCS FOOD	non-TCS FOOD	PA**
> 0.95	non-TCS FOOD	PA	PA

\* TCS FOOD means TIME/TEMPERATURE CONTROL FOR SAFETY FOOD

\*\* PA means Product Assessment required





**Table B. Interaction of pH and  $A_w$  for control of vegetative cells and spores in FOOD not heat-treated or heat-treated but not PACKAGED**

$A_w$ values	pH: < 4.2	pH: 4.2 - 4.6	pH: > 4.6 - 5.0	pH: > 5.0
< 0.88	non-TCS food*	Non-TCS food	non-TCS food	non-TCS food
0.88 – 0.90	non-TCS food	non-TCS food	non-TCS food	PA**
> 0.90 – 0.92	non-TCS food	non-TCS food	PA	PA
> 0.92	non-TCS food	PA	PA	PA

\* TCS FOOD means TIME/TEMPERATURE CONTROL FOR SAFETY FOOD

\*\* PA means Product Assessment required





(3) ***"Time/temperature control for safety food" does not include:***

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(a) *An air-cooled hard-boiled egg with shell intact, or an EGG with shell intact that is not hard-boiled, but has been pasteurized to destroy all viable **salmonellae**;*



### **(3) "*Time/temperature control for safety food*" does not include:**

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*(b) A FOOD in an unopened  
HERMETICALLY SEALED CONTAINER  
that is commercially processed to achieve  
and maintain commercial sterility under  
conditions of non-refrigerated storage and  
distribution;*





### **(3) "*Time/temperature control for safety food*" does not include:**

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*(c) A FOOD that because of its PH or AW value, or interaction of AW and PH values, is designated as a non-TCS FOOD in Table A or B of this definition;*



### (3) "***Time/temperature control for safety food***" does not include:

(d) A FOOD that is designated as Product Assessment Required (PA) in Table A or B of this definition and has undergone a Product Assessment showing that the growth or toxin formation of pathogenic microorganisms that are reasonably likely to occur in that FOOD is precluded due to:

- (i) Intrinsic factors including added or natural characteristics of the FOOD such as preservatives, antimicrobials, humectants, acidulants, or nutrients,
- (ii) Extrinsic factors including environmental or operational factors that affect the FOOD such as packaging, modified atmosphere such as REDUCED OXYGEN PACKAGING, shelf life and use, or temperature range of storage and use, or



### **(3) "*Time/temperature control for safety food*" does not include:**

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*(e) A FOOD that does not support the growth or toxin formation of pathogenic microorganisms in accordance with one of the Subparagraphs (3)(a) - (3)(d) of this definition even though the FOOD may contain a pathogenic microorganism or chemical or physical contaminant at a level sufficient to cause illness or injury.*

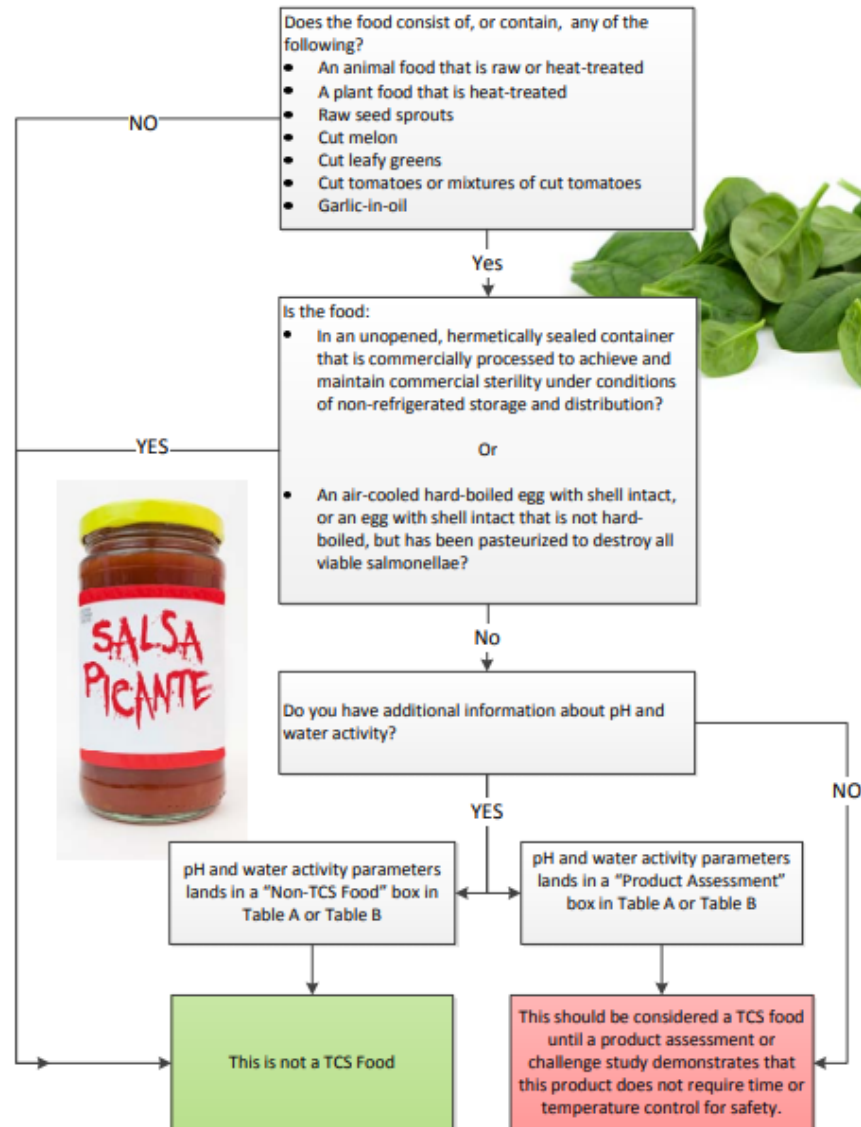






### JOB AID: Time and Temperature Control for Safety Foods

This job aid is intended to be used in conjunction with the FDA Food Code. It will help the user determine if a food is considered a Time/Temperature Control for Safety Food, according to the definition provided in the FDA Food Code.





# All TCS Foods are not equal

- Date marking exemptions
- Competing microorganisms?

Pathogen	pH Range	Growth Temperature Range
<i>L. monocytogenes</i>	4.5 – 9.6	34°F – 113°F
<i>S. aureus</i>	4.8 – 8.0	39°F – 115°F
<i>Salmonella</i> spp	4.1 – 9.0	43°F – 115°F
<i>E. Coli</i> O157:H7	Survives 3.6	39°F – 113°F
<i>C. perfringens</i>	5.0 – 9.0	59°F – 131°F
<i>B. cereus</i>	4.9 – 9.3	50°F – 91°F
<i>C. botulinum</i>	4.6 – 8.9	37°F – 113°F
<i>C. jejuni</i>	4.9 – 9.0	86°F – 122°F



**3-501.19 Table 1.** The USDA Pathogen Modeling Program estimation of growth (Log CFU/g) of several pathogens for 6 hours or 8 hours, at 65°F.

PATHOGENS	6 HOURS	8 HOURS
<i>B. cereus (vegetative cells)</i>	0.62	0.87
<i>E. coli</i>	0.35	0.52
<i>L. monocytogenes</i>	0.47	0.71
<i>Salmonella Spp.</i>	0.25	0.41
<i>S. flexneri</i>	0.26*	0.34*
<i>S. aureus</i>	0.38*	0.51*

\* Model predictions were in 5 hour increments, the 6 and 8 hour data was extrapolated between 5 hour and 10 hour predictions.





You Make the Call

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# White Bread

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info





# Focaccia

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info





# BBQ Sauce (Made in-house)

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info





# Salsa (Fresh, made on-site)

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info





# Salsa (Cooked, made on-site)

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info



# Garlic Cloves in Oil

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info





# Nut Milks

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info



# Nut Cheese

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info



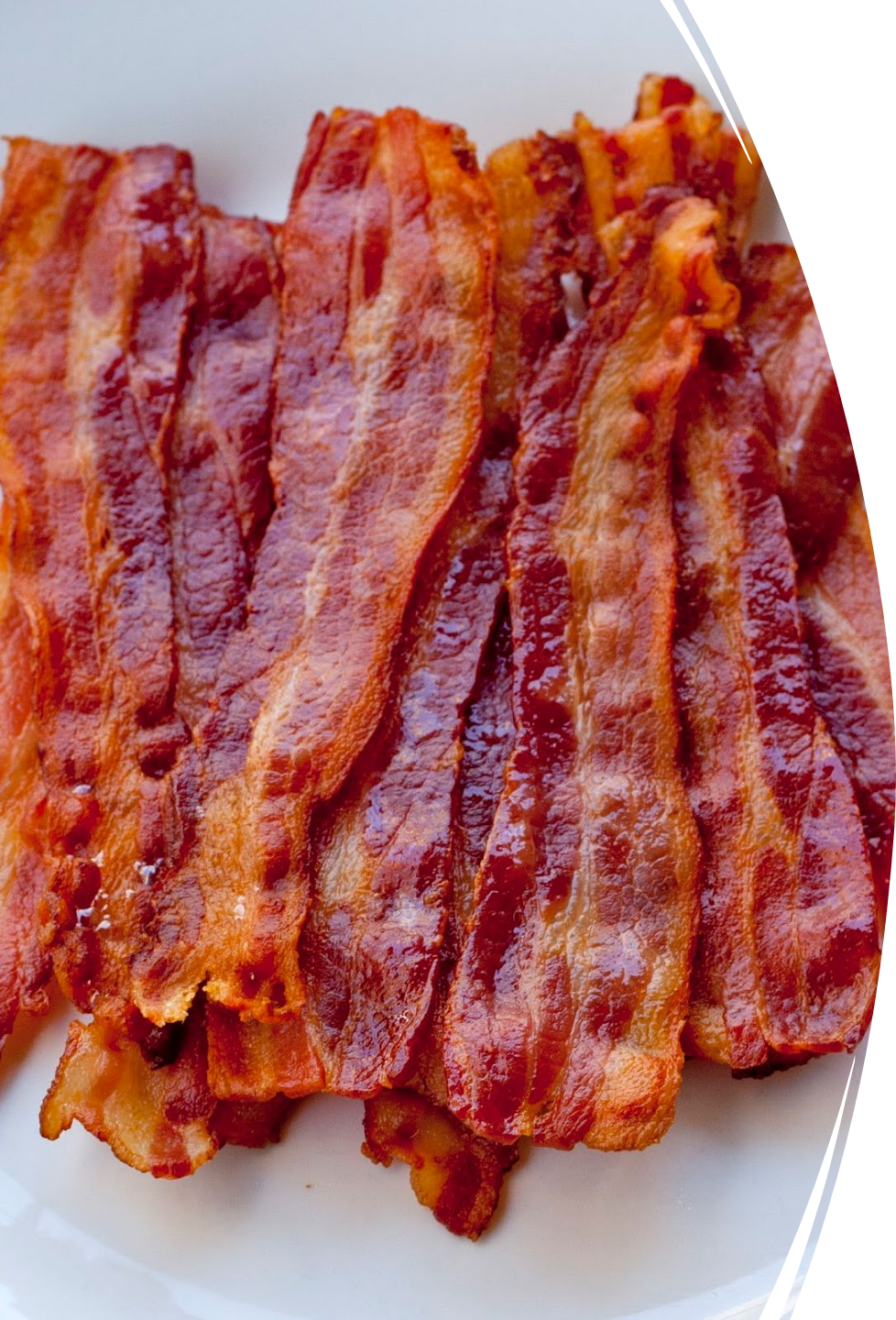
# Raw Meat and Poultry

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info







# Bacon (Cooked)

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info

# Batter (used w/ raw chicken)

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info







# Waffle Batter

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info

# Hash Browns (Reconstituted)

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info



# Butter

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info





# Cheddar Cheese

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info



A stack of American cheese slices, showing the characteristic orange color and wavy texture. The stack is on the left side of the slide, with a white background on the right.

# American Cheese Slices

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info



# Brie

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info



# Banana Cream Pie

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info





# Pumpkin Pie

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info





# Cream Cheese Frosting

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info



# Boba (Tapioca pearls)

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info



# Tea (in room temperature dispenser-unsweet)

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1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info



# Review the Game Film (Resources)



WATER ACTIVITY

[HTTPS://ONLINELIBRARY.WILEY.COM/DOI/PDF/10.1002/9780470376454.APP5](https://onlinelibrary.wiley.com/doi/pdf/10.1002/9780470376454.app5)



PH

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# That's the Ball Game!

