

TCS or Not? You Make the Call!

AFDO Inspector Boot Camp



- <https://www.youtube.com/watch?v=gtdd8CqAQ90>



Goal Line

Identifying Time/Temperature Control for Safety Food (TCS)



Program

- Review Time/Temperature control for safety food (TCS Food) definition
- Review TCS Food tools
- Relative Risk of 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
≤ 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:***

*(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:

(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:

(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:

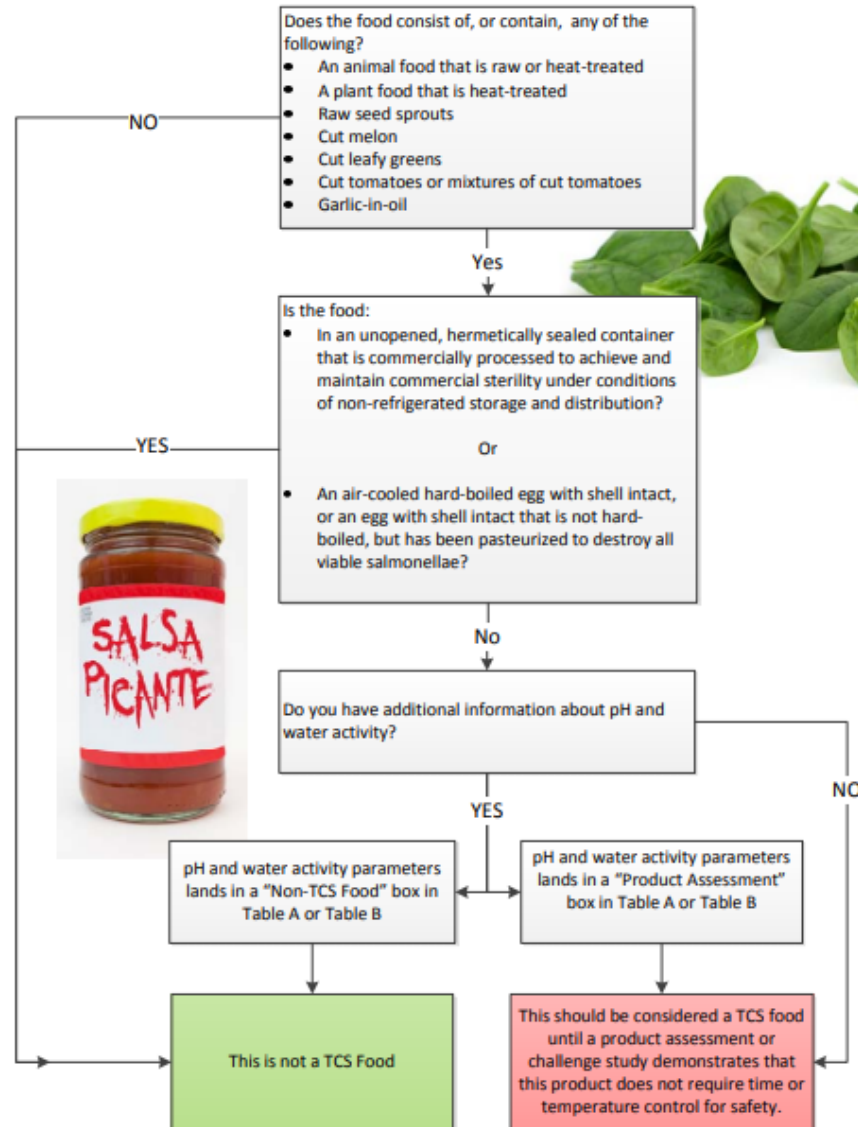
(e) A FOOD that does not support the growth or toxin formation of pathogenic microorganisms in accordance with one of the Subparagraphs (3)(a) - (3)(d) of this definition even though the FOOD may contain a pathogenic microorganism or chemical or physical contaminant at a level sufficient to cause illness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

White Bread

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



Focaccia

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



BBQ Sauce (Made on-site)

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



Salsa (Fresh, made on-site)

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



Salsa (Cooked, made on-site)

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



Boba (Tapioca pearls)

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



Banana Cream Pie

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



Pumpkin Pie

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

Formulated? In-house?



Cream Cheese Frosting

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

What is the formulation? Is it standardized to be 65% sugar by weight?



Raw Meat and Poultry

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

Lower on priority list as there are high levels of competing spoilage organisms



A wooden bowl filled with almonds is shown next to a glass of almond milk. The bowl is made of light-colored wood and is filled with whole almonds. The glass is partially filled with a light-colored liquid, presumably almond milk. The background is a dark, textured surface, possibly a wooden table.

Nut Milks

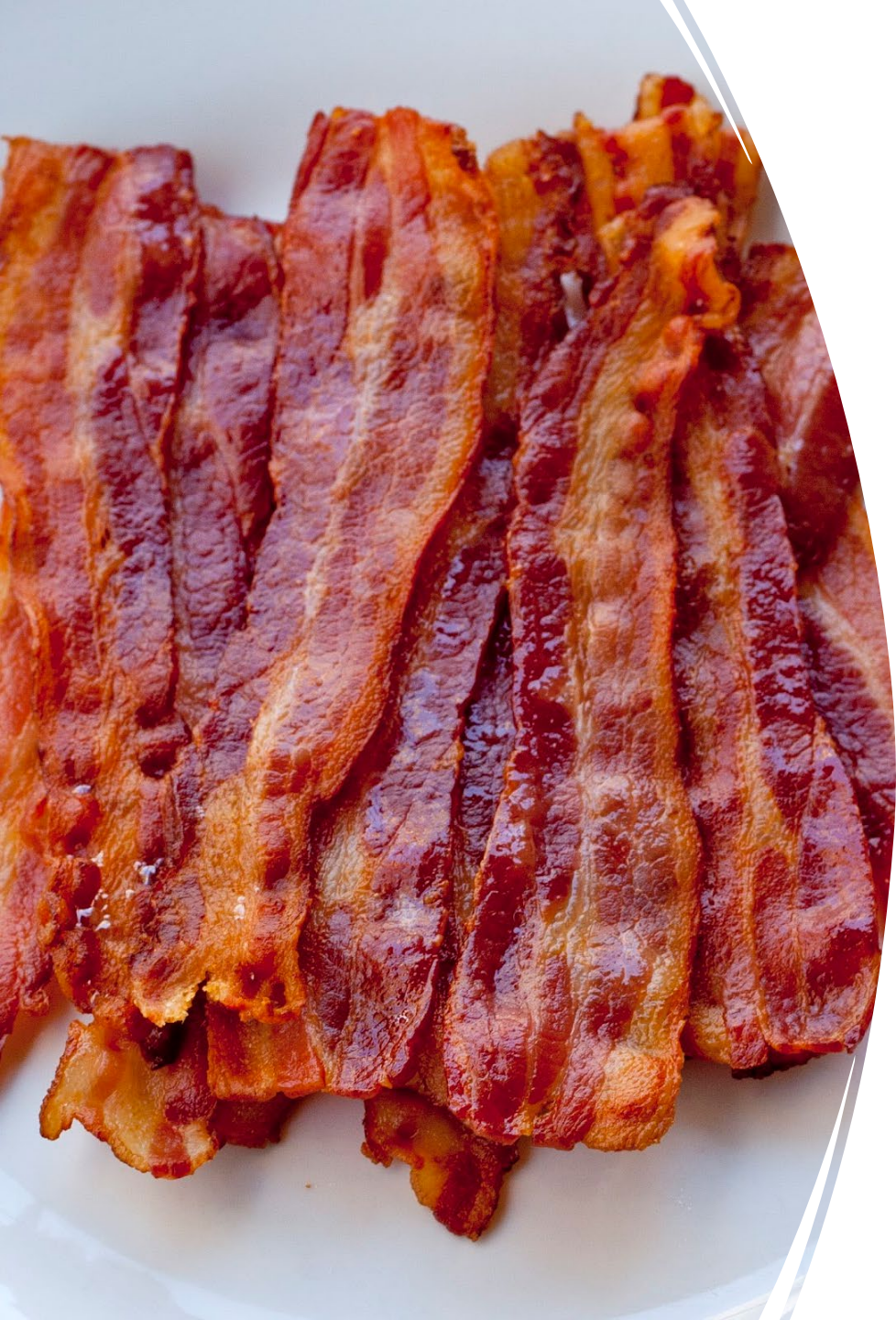
1. Definitely TCS
2. Probably TCS
3. Probably Not TCS
4. Definitely Not TCS
5. Need More Info

Unless formulated

Nut Cheese

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





Bacon (Cooked)

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

Batter (used w/ raw chicken)

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





Waffle Batter

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

Lower on the risk scale

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!

