

Department of Food Science

TCS or Not? A Practical Guide for Homemade Food Processors

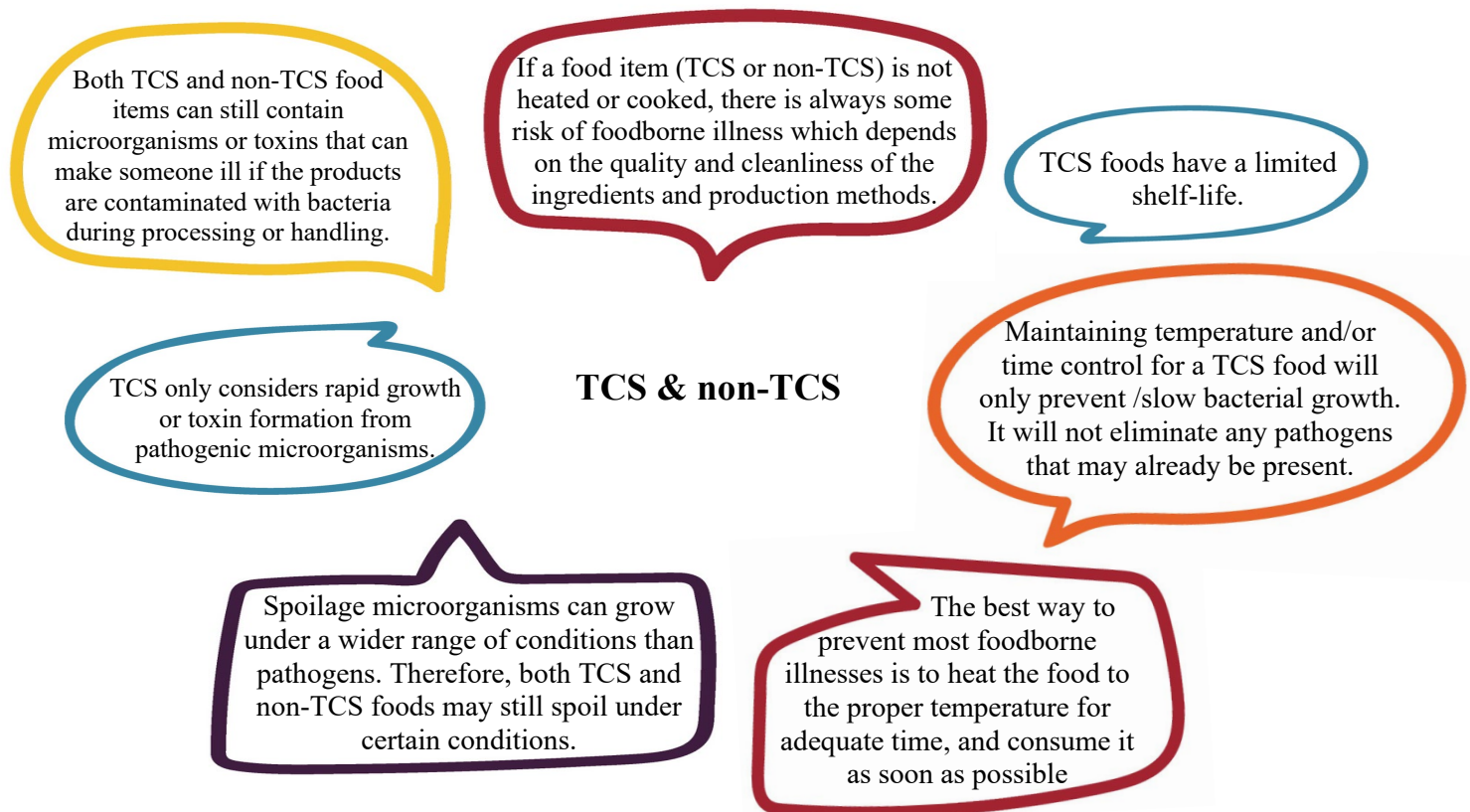
February 2026

*Damla Dag Ertop, Extension Assistant Professor, Department of Food Science
Mark Morgan, Professor and Extension Specialist, Department of Food Science*

Disclaimer:

This publication is for educational purposes only and does not constitute legal advice nor is it intended to be a substitute for the services of a competent legal professional or regulatory oversight.

Since the 2025 revision to Tennessee's Food Freedom Act (TFFA) allows both Time/Temperature Control for Safety Food (TCS) and non-TCS homemade food items to be made at a private residence and sold within Tennessee, knowing which food items are TCS and require proper temperature control for safety is imperative for the home-based producer. This publication will provide an expanded explanation of TCS foods, explain the safety aspects of TCS and non-TCS foods, provide a step-by-step guide to identify which category a multi-ingredient food item may fall into based on its pH and water activity (Aw), and explain how the TFFA applies to each product category.



TCS and non-TCS foods

Time/Temperature Control for Safety Food (TCS) is food that requires time and/or temperature control to limit pathogenic microorganism growth or toxin formation.

VS

Non-Time/Temperature Control for Safety Food (non-TCS) is food that does not require time and/or temperature control to limit pathogenic microorganism growth or toxin formation.

The following food products are generally considered TCS according to the Food Code 2022:

1. Animal-based products (such as poultry, meat, seafood, egg and dairy products) that are either raw or cooked
2. Plant-based products, such as vegetables and (some) fruits that are cooked, or contain raw seed sprouts, cut melons, cut leafy greens, cut tomatoes
3. Garlic-in-oil mixtures that do not have the garlic properly acidified to a pH below 4.6.

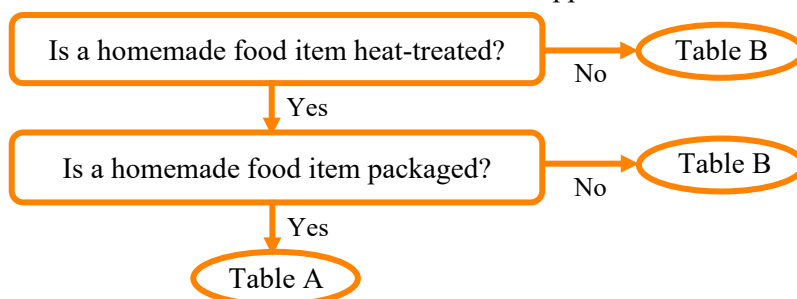
Some exceptions to the above items include:

- hard-boiled eggs with shell intact
- any food item properly preserved by canning AND kept in an unopened hermetically sealed container. For example, properly canned soup in an unopened hermetically sealed jar is non-TCS, but once opened, it becomes TCS.

For other products not listed above, the step-by-step guideline below can help determine whether they are classified as TCS or non-TCS.

Step-by-step guideline to distinguish TCS and non-TCS foods

Step 1: Determine which table from Food Code 2022 applies to a homemade food item, Table A or B.



Step 2: Measure or submit a homemade food item for pH and/or water activity testing

pH could be measured at home with a calibrated pH meter (see UT Extension publication W1362 linked in the References and Resources Section). If home testing is not feasible, the UT Food Science Extension program offers pH and water activity testing services for a small fee (see the References and Resources Section for the link to the sample submission instructions).

Step 3: If the pH and water activity match a combination labeled as non-TCS in the appropriate table (identified in Step 1), then it is classified as non-TCS and may be stored, distributed, and sold at room temperature (unless specifically prohibited under the TFFA). If marked as PA, the product would be considered TCS unless an assessment by a process authority/commercial testing laboratory shows that the growth or toxin formation of pathogenic microorganisms is NOT reasonably likely to occur (this assessment is usually cost prohibitive).

Table A. Interaction of pH and A_w for control of spore-forming bacteria in food **heat-treated** to destroy vegetative bacteria 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*		
> 0.92-0.95	non-TCS food		PA**
> 0.95	non-TCS food	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.**

Aw values	pH: < 4.2	pH: 4.2-4.6	pH: > 4.6-5.0	pH: > 5.0
< 0.88	non-TCS food*			
0.88-0.90	non-TCS food			PA**
> 0.90-0.92	non-TCS food		PA	
> 0.92	non-TCS food	PA		

*TCS Food means Time/Temperature Control for Safety Food

**PA means Product Assessment required

Example Classification: Fermented Cucumbers

- ✓ Fermented cucumbers, commonly known as traditional pickles, are cucumbers soaked in a salty brine. Natural bacteria turn sugars into lactic acid, giving them their characteristic tangy flavor.
- ✓ Ingredients: Pickling cucumbers, Water, Pickling salt, Spices of choice (for flavor).
- ✓ The cucumbers were fully submerged in the brine for 6 days, resulting in a final pH of 3.5.

Step 1: The fermented cucumbers are **not heat-treated**. Refer to **Table B**.

Step 2: Measure the pH of a pickle (after fermentation is complete). Since the fermentation does not significantly change the water activity of the cucumber, the pickles will still have water activity ~ 0.95 .

- pH = 3.5
- $A_w = \sim 0.95$

Step 3: Use Table B to determine the classification:

- Column: pH : < 4.2
- $A_w > 0.92$

According to Table B, this combination of pH and water activity is classified as a non-TCS (Time/Temperature Control for Safety) food. It can be stored at room temperature. It may still spoil over time, but refrigeration is not required for safety.

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.**

Aw values	pH: < 4.2	pH: 4.2-4.6	pH: > 4.6-5.0	pH: > 5.0
< 0.88	non-TCS food*			
0.88-0.90	non-TCS food			PA**
> 0.90-0.92	non-TCS food		PA	
> 0.92	non-TCS food	PA		

TFFA (2025) Regulations for non-TCS and TCS foods

	Non-TCS homemade food items	TCS homemade food items
Definition	Food that does not require time and/or temperature control for safety	A food that requires time and/or temperature control for safety (TCS)
Examples under the TFFA (2025)	Most shelf stable foods, i.e. those adequately preserved (by lowering pH and/or water activity) and stored under non-refrigerated temperatures such as properly fermented or canned products, dried fruits/vegetables, or baked goods with or without frostings/fillings with low water activity. (see Tables A & B)	TCS homemade food items cannot include unpasteurized (raw) milk, alcohol, red meats (beef, lamb or pork), meat by-products, fish and shellfish products. They may include poultry, poultry byproducts or poultry food products if 1) the business operates as a poultry producer in compliance with the 1,000-poultry exemption or 2) uses federally or state-inspected and passed poultry products bearing the official mark of inspection. Canning of poultry products is not allowed under the TFFA due to the limitations of the USDA exemption for use of poultry products by food establishments.
General Processing recommendations	Approved process from reliable sources such as 1) the USDA Complete Guide to Home Canning, 2) The All New Ball Book of Canning and Preserving, 3) The National Center for Home Food Preservation, or 4) Tested frosting and filling recipes (e.g. from Kansas State University guide)	Heat the poultry products to at least 165 F. Perform heating or cooling of food as rapidly as possible to avoid the possibility of bacterial growth. Package water-activity-controlled products (e.g., baked goods and dehydrated fruits) in moisture-barrier packaging and store in dry conditions.
Storage recommendations	At room temperature Can be refrigerated to maintain the quality and delay spoilage.	Keep cold TCS food items below 41 F at all times from production to sale. Keep hot TCS food items above 135 F at all times from production to sale. Discard TCS food items held in the danger zone between 41 F and 135 F for more than 2 hours.
Location of production	At a private residence	
Where to sell	Within the state of Tennessee	
How to sell	In person, remotely, by an agent of the producer or by/through a third-party vendor	In person or by an agent of the producer in person, direct to the consumer only

Where you <u>cannot</u> sell	Food service establishments such as restaurants are not allowed to purchase and use homemade food items.	No third-party vendors, like grocery stores. Food service establishments such as restaurants are not allowed to purchase and use homemade food items.
Delivery	By the producer to the consumer, an agent of the producer, third-party vendor or third-party carrier to the consumer.	No delivery other than in-person by the producer.
Inspection	Not required. However, the home-based producer must not impede the TN Department of Health in an investigation of a reported foodborne illness.	
Labelling	All homemade food items sold in Tennessee must include the following: 1. Producer contact information including: • Producer’s (or Business) Name • Home physical address (no PO Box) • Telephone number (for producer or business) 2. Common/usual name of the homemade food item 3. Ingredients of the food item in descending order of predominance by weight (including sub-ingredients in parentheses) 4. The following statement: “This product was produced at a private residence that is exempt from state licensing and inspection. This product may contain allergens.” In addition to the requirements above, including a “Keep Refrigerated” notice on the label of TCS-foods is strongly recommended to inform buyers.	

Additional Information

For further information and additional resources, please contact:

University of Tennessee,

Food Science Department

2510 River Drive, Knoxville, TN, 37996

Email: foodsci_ext@utk.edu

Website: <https://foodscience.tennessee.edu/food-science-extension/>

References and Additional Resources

2022 Food Code - [fda.gov/food/fda-food-code/food-code-2022](https://www.fda.gov/food/fda-food-code/food-code-2022)

Blakeslee, K., et al. Food Safety of Frostings and Fillings. Kansas State University Agricultural Experiment Station and Cooperative Extension Service, December 2020. Available at: https://bookstore.ksre.ksu.edu/download/food-safety-of-frostings-and-fillings_MF3544

Food Science Extension. Sample Submission Instructions. <https://foodscience.tennessee.edu/services/>

National Center for Home Food Preservation. <https://nchfp.uga.edu/resources/category/usda-guide>

Tennessee Code Annotated – § 53-1-118 with interpretations. Exemption for production and sale of homemade food items: https://foodscience.tennessee.edu/wp-content/uploads/sites/52/2025/12/TENN_53-1-118_FINAL.pdf

United States Department of Agriculture (USDA). (2015). Complete Guide to Home Canning.

UT Extension publication PB1909 Tennessee’s Food Freedom Act – 2025 Non-TCS vs TCS Homemade Food Items: <https://utia.tennessee.edu/publications/wp-content/uploads/sites/269/2023/10/PB1909.pdf>

UT Extension publication W1362 Measuring pH of Food Products: <https://utia.tennessee.edu/publications/wp-content/uploads/sites/269/2026/01/W1362.pdf>



UTIA.TENNESSEE.EDU

Real. Life. Solutions.™

02/26 26-0152 Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences, and resource development. University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating. UT Extension provides equal opportunities in programs and employment.