# Guidance for Handling Rehydrated Foods in Retail Settings

*Ensuring safety and compliance in food retail environments*

# Agenda Overview

- Committee Composition and Membership
- Introduction and Public Health Significance of Rehydrated Foods
- Risk Analysis and Literature Review
- Control Measures for Rehydrated Foods
- Recommendations for Operators and Regulators

# History of Rehydrated Foods Committee

*Veronica Bryant, REHS*

# CFP Biennial Meeting, 2023

- Issue Submission – Issue III-022

- Original Issue - A recommendation is being made to create a committee to evaluate the food preparation practices related to rehydrated foods and provide food safety guidance and recommendations

- Issue Accepted as Amended

# CFP Biennial Meeting, 2023

- Charges added during deliberation
- Charges for this committee would include:
  1. Reviewing of the literature available on rehydration of food practices at retail
  2. Analyzing of food safety hazards likely to occur during rehydration process and during hydrated storage.
  3. Providing guidance on controlling hazards, in a guidance document or another format
  4. Identifying the recommended methods to disseminate the committee's findings
  5. Reporting the committee's findings at the next CFP Biennial Conference

# CFP Biennial Meeting, 2023

- Time/Temperature Control for Safety (TCS) definition: Code Section 1-201.10(B), it is difficult to determine whether rehydrated foods meet this definition.
- Examples of rehydrated foods include potato flakes, beans, vegetables noodles, etc.,
- Specific example: when plant foods such as peppers or mushrooms are rehydrated, they are often placed in room temperature water, which means they are not considered a heat-treated plant food during rehydration.

# Introduction and Public Health Significance of Rehydrated Foods

# Overview of Rehydrated Foods and TCS Classification

### Benefits of Dehydrated Foods

Dehydrated foods save shipping costs, extend shelf life, and offer cost-effective options for food operators.

### TCS Food Classification Challenges

Rehydrated foods' classification as TCS depends on the dehydration process and water activity levels.

### Dehydration Process Effects

Heat treatment and water activity changes can shift foods between TCS and non-TCS classifications.

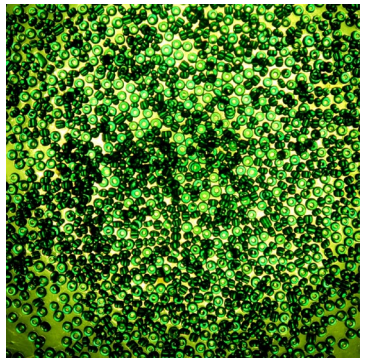
### Future Guidance Needs

New dehydration technologies like freeze-drying increase the need for updated handling guidance.

# Food Safety Considerations and FDA Food Code Definitions

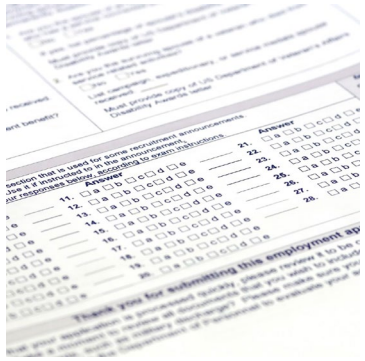
## Dehydration and Rehydration Factors

Temperature, rehydration liquid, duration, and storage impact food safety during dehydration and rehydration processes.



## Rehydrated Food Safety Risks

Rehydrated vegetables have similar pH and water activity but may pose different safety risks due to cell structure changes.



## FDA Food Code Definitions

2022 FDA Food Code defines TCS foods and outlines current time and temperature control standards for food safety.

# Committee Composition and Membership

# Voting and Non-voting Members of the Committee

| VOTING MEMBERS | NON-VOTING MEMBERS |
|---|---|
| **Veronica Bryant, Chair, NC DHHS** | Sunny Muir, FDA Consultant |
| **Natalie Seymour, Vice-Chair, Ecolab** | John Cottier, USDA Consultant |
| **Carrie Pohjola, Wisconsin Department of Agriculture, Trade and Consumer Protection** | Amanda Anderson, Oakland County Health Dept |
| **Laura Jordan, Moore County Health Dept** | Paige Anderson, State of Missouri Dept. of Health |
| **Todd Rossow, Publix Super Markets** | Archana Pradhan, Houston Health Department |
| **Ellen Ciarimboli, Hy-Vee, Inc** | Deborah Crabtree, Fairfax County Health Dept |
| **Mary Yavelak, NC State University** | Hilary Thesmar, FMI |
| **Vanessa Coffman, Stop Foodborne Illness** | Paula Herald, Steritech |
| **Ricky Ross, Adams County Health Dept** | Jack Burnett, Diversey |
| **Diedre Moltre, Maryland Dept of Health** | George Roughan, TAP Series |
| **Stephen Czarnecki, Michigan Dept of Ag** | Ellen Shumaker, NC State University |

# Science Behind the Concern

*Natalie Seymour, MS*

# Risk Analysis and Literature Review

# Committee Charges and Scope of Work

**Reviewing Rehydration Practices**

The committee compiled and reviewed retail rehydration food practices to understand current methods and risks.

**Food Safety Hazard Analysis**

They analyzed potential food safety hazards during rehydration and hydrated storage to guide control measures.

**Scope Narrowing for Focus**

To be efficient, the committee focused on potato products, non-potato vegetables, and freeze-dried foods.

# Initial Product List

- Animal foods
  - Eggs, powdered milk
- **Plant foods**
  - **Potatoes, peppers, onions, corn, tapioca, etc**
- **Freeze dried foods**
- Sauces and seasonings
  - Gravies, pudding, sauces, seasoning blends
- Sea plants
  - Nori, sea moss gel
- Beans
- Rice items
  - Noodles, spring roll papers, horchata, rice milk
- Rehydrated grains/nuts
  - Oat/nut milks, non-dairy creamers, cornmeal pastes, batter, teff/injera,

# Bacterial Growth and Toxin Formation Risks

### Risk of Bacterial Growth

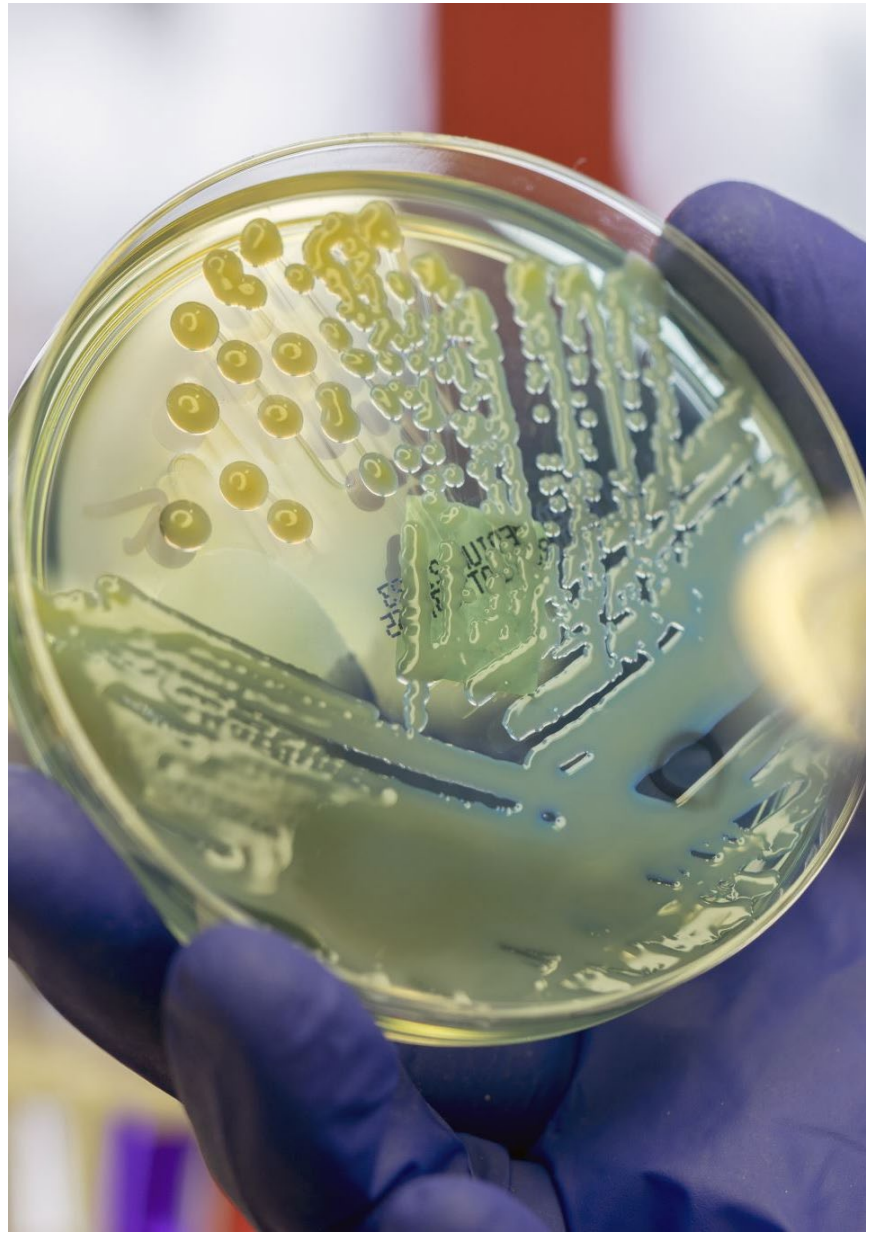
Rehydrated foods left outside temperature control can promote bacterial growth and toxin formation in TCS food matrices.

### Role of Dehydration

Dehydration often reduces water activity, which is relied upon to control biological hazards in foods.

### Temperature Control Importance

Maintaining temperature control is critical to prevent pathogen activation and toxin formation after rehydration.



# Pathogenic Microorganisms in Rehydrated Foods

**Pathogen Recovery After Dehydration**

Pathogenic bacteria can survive dehydration and are recoverable, especially with freeze-drying preservation methods.

**Impact of Rehydration Temperature**

Higher water temperatures during rehydration increase pathogen growth compared to low temperatures.

**Microbial Growth in Rehydrated Foods**

Rehydrated foods, especially low acid ones, meet TCS food criteria and may support pathogen proliferation if improperly stored.

**Contamination in Dried Mushrooms**

Many dried mushrooms show coliform contamination and rapid bacterial growth when soaked at room temperature.

# Spore Forming Pathogens and Foodborne Illness Cases

### Spore-Forming Pathogen Risk

Spore-forming pathogens like *Bacillus cereus* pose significant food safety risks due to their resistance to dehydration.

### Contamination in Dehydrated Foods

Studies found *Bacillus cereus* in 10-40% of dehydrated potato products, indicating contamination risks.

### Foodborne Illness Cases

*Bacillus cereus* can revert to vegetative state in rehydrated foods, causing foodborne illness outbreaks.

# Consumer Safety and Retail Guidance

### Dehydrated and Rehydrated Foods

Some operators sell dehydrated or rehydrated foods directly to consumers, requiring careful safety oversight.

### Pathogen Risks in Rehydrated Products

Without proper food safety knowledge, pathogens on rehydrated products could become active and cause illness.

### Safety Guidance for Retail Products

Retail products need clear guidance on refrigeration timing after hydration to prevent microbial growth.

# Discussing the Guidance Document

*Mary Yavelak, MS*

# Control Measures for Rehydrated Foods

# Choosing Temperature Control Measures

**Importance of Temperature Control**

Temperature is the key factor in controlling foodborne illness risk during food rehydration. Monitoring temperature ensures food safety.

**Following Manufacturer’s Instructions**

If provided, follow manufacturer’s instructions for rehydration temperature, time, and storage to ensure food safety.

**Rehydration Without Instructions**

If no instructions exist, use boiling or cold water with time and temperature combinations based on research to safely rehydrate food.

# Manufacturers' Instructions

**Validation of Instructions**

Manufacturers must validate rehydration procedures through scientific studies or process controls to confirm food safety and quality outcomes.

**Issue 2025-III-09**

Proposed a new section "Rehydration of Dehydrated Foods, Manufacturer's Instructions" which would state

> *"Commercially packaged food that bears manufacturer's rehydration instructions shall be prepared and held according to those instructions before being served in unpackaged form to the consumer."*

**Manufacturer's Instructions Issue Outcome**

The issue was accepted at the CFP 2025 annual meeting. FDA's response letter listed this recommendation as one that FDA conceptually agrees with

The **FDA concurs (conceptually agrees)** with 20 of the 41 recommendations in Part 1 of your letter and anticipates making changes to the Food Code and its Annexes related to the following Issues:

*Please note that 'conceptually agrees' means that the FDA agrees in concept with the intent of these 20 recommendations but may not agree with specific proposed wording or placement for the Food Code change. In these cases, the FDA may choose to modify the recommended text, either to provide clarity or to achieve consistency with the structure or conventions of the Food Code, including cross references*

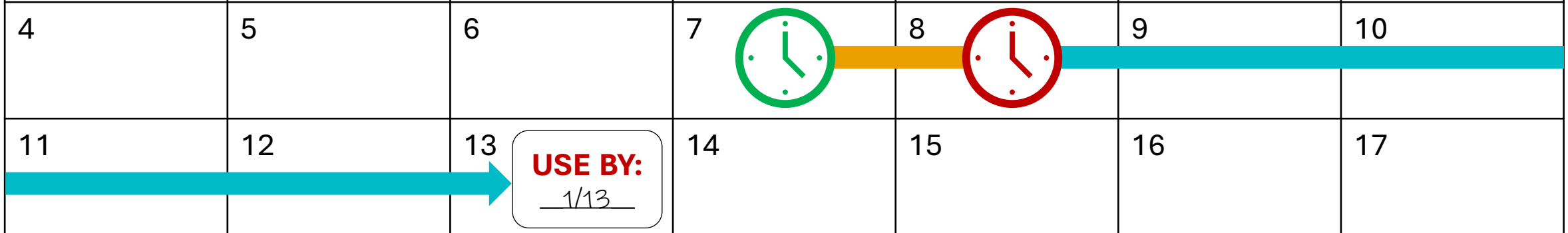
| | |
|---|---|
| **2025-I-01** | Report – Plan Review Committee (PRC) |
| **2025-I-02** | PRC Amend Food Code to add the definitions for commissary and mobile food establishment |
| **2025-I-15** | Update the Institute of Food Technologists (IFT) "Evaluation and Definition of Potentially Hazardous Foods" report |
| **2025-I-16** | Update Vending Machine Cold Holding Temperature Control Lockout Parameter |
| **2025-I-18** | Amend Date Marking Exemption List to Remove Foods Not Subject to Date Marking |
| **2025-I-20** | § 3-401.15 Manufacturing Cooking Instructions |
| **2025-I-23** | Provide clarity to cleaning of produce fogging devices |
| **2025-I-24** | Amend Food Code – Inclusion of Utensils and Tableware in 4-205 Acceptability § 4-205.10 |
| **2025-I-25** | Clarify ¶ 3-401.11(D) whether Consumer Advisory for Raw Animal Foods is only for Immediate Service |
| **2025-I-28** | § 2-301.14- Allowance for loose-fitting gloves as a utensil |
| **2025-I-30** | § 2-303.11 Prohibition-Jewelry |
| **2025-I-31** | Amend Food Code – Clarify Employee Illness Policy |
| **2025-I-32** | Align the marking guide in Annex 7 to the marking guide in the FDA Procedures for Standardization of Retail Food Safety Inspection Officers |
| **2025-II-30** | Allergen Committee #4: Amend Annex 3 – Revise "Cross Contact" Description |
| **2025-III-09** | RFC 3 - Amend Food Code Language to include Following Manufacturer's Instructions for Rehydration |
| **2025-III-13** | Amend the temperature requirements for sanitizer in § 4-501.114 |
| **2025-III-27** | Update text in Annex 3, 3-501.19 regarding Using Time as a Public Health Control |
| **2025-III-28** | Mushroom Cooking Temperature |
| **2025-III-29** | Amend Food code to clearly define shallow pan cooling within ¶ 3-501.15(A) |

# Recommended Time and Temperature Combinations

| | COLD WATER REHYDRATION | BOILING WATER REHYDRATION |
|---|---|---|
| **Rehydration Step** | Foods should be maintained at or below 5ºC/41ºF for less than 24 hours. | Foods are placed in the boiling water to rehydrate and should not drop below 60ºC/140ºF during the rehydration process. |
| **Service/ Storage Step** | Foods should be served immediately OR should be drained and stored cold at or below 5ºC/41ºF for a maximum of seven days (time includes the initial 24 hour rehydration period) | Foods should be served immediately OR cooled according to the parameters in the FDA Model Food Code 3-501.14 and stored cold at or below 5ºC/41ºF for a maximum of seven days (time includes the rehydration period.) |

# Example – Cold Water Rehydration

| Sun | Mon | Tues | Wed | Thurs | Fri | Sat |
|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 **USE BY:** 1/13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 |



# Example – Boiling Water Rehydration

| Sun | Mon | Tues | Wed | Thurs | Fri | Sat |
|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 |
| 4 | 5 | 6 | 7  | 8 | 9 | 10 |
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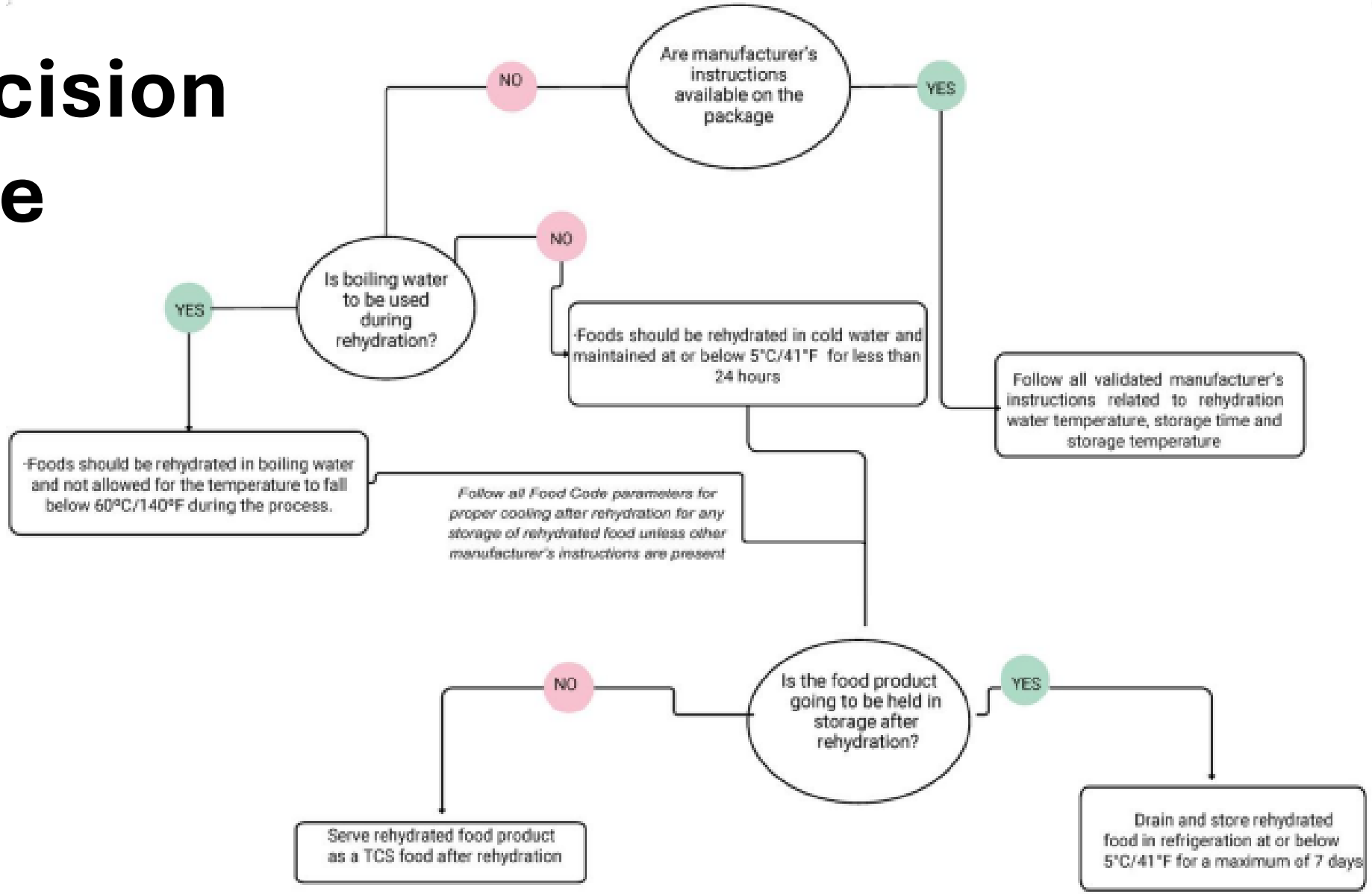
# Decision Tree



# Using the Guidance Document in the field

*Carrie Pohjola, REHS*

# Using the Guidance Document in the Field and Recommendations

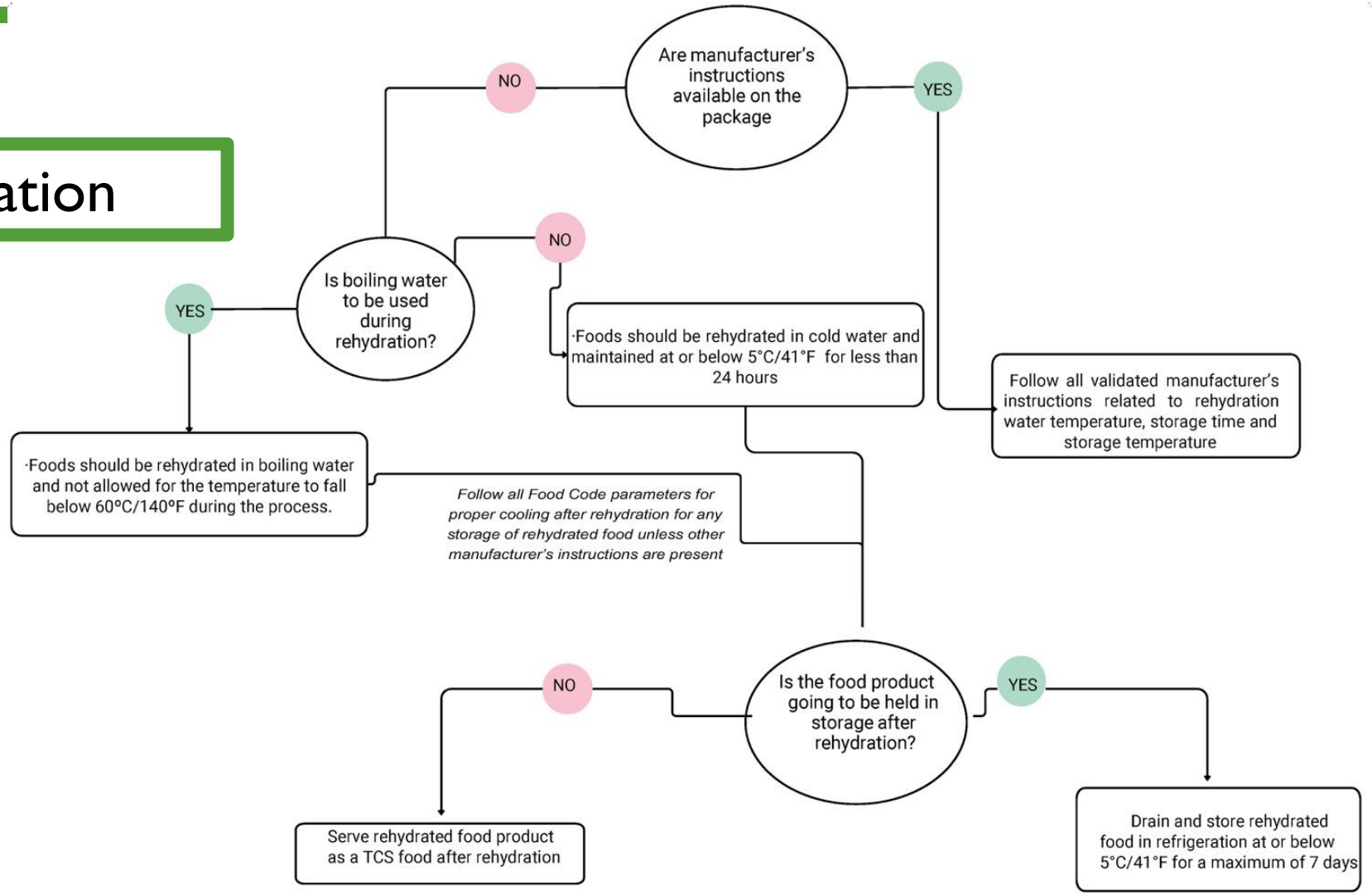
Carrie Pohjola

WISCONSIN DEPARTMENT OF AGRICULTURE, TRADE AND CONSUMER PROTECTION (DATCP)

January 29, 2026

# USING THE GUIDANCE DOCUMENT IN THE FIELD

# Decision Tree for Rehydration

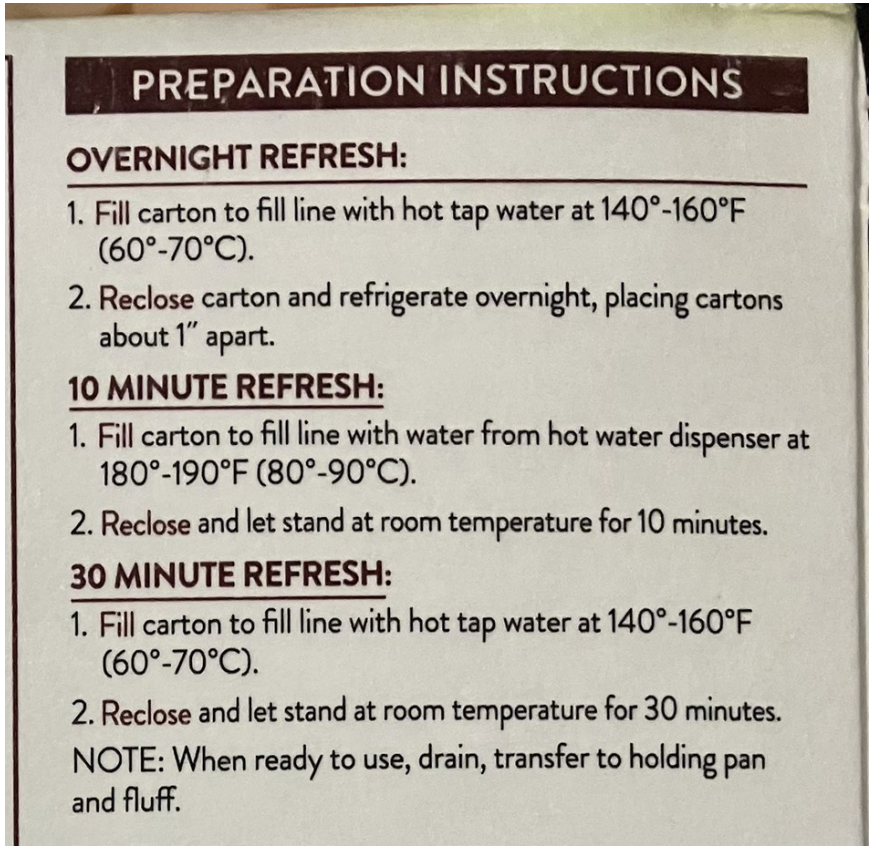


# SCENARIOS

If the operator follows the directions and you take a temperature of the product after the refresh has occurred earlier in the day, is this allowed using the Guidance Document?

a. Yes
b. No
c. Depends

What are some questions that you would ask?



**PREPARATION INSTRUCTIONS**

**OVERNIGHT REFRESH:**

1. Fill carton to fill line with hot tap water at 140°-160°F (60°-70°C).
2. Reclose carton and refrigerate overnight, placing cartons about 1" apart.

**10 MINUTE REFRESH:**

1. Fill carton to fill line with water from hot water dispenser at 180°-190°F (80°-90°C).
2. Reclose and let stand at room temperature for 10 minutes.

**30 MINUTE REFRESH:**

1. Fill carton to fill line with hot tap water at 140°-160°F (60°-70°C).
2. Reclose and let stand at room temperature for 30 minutes.

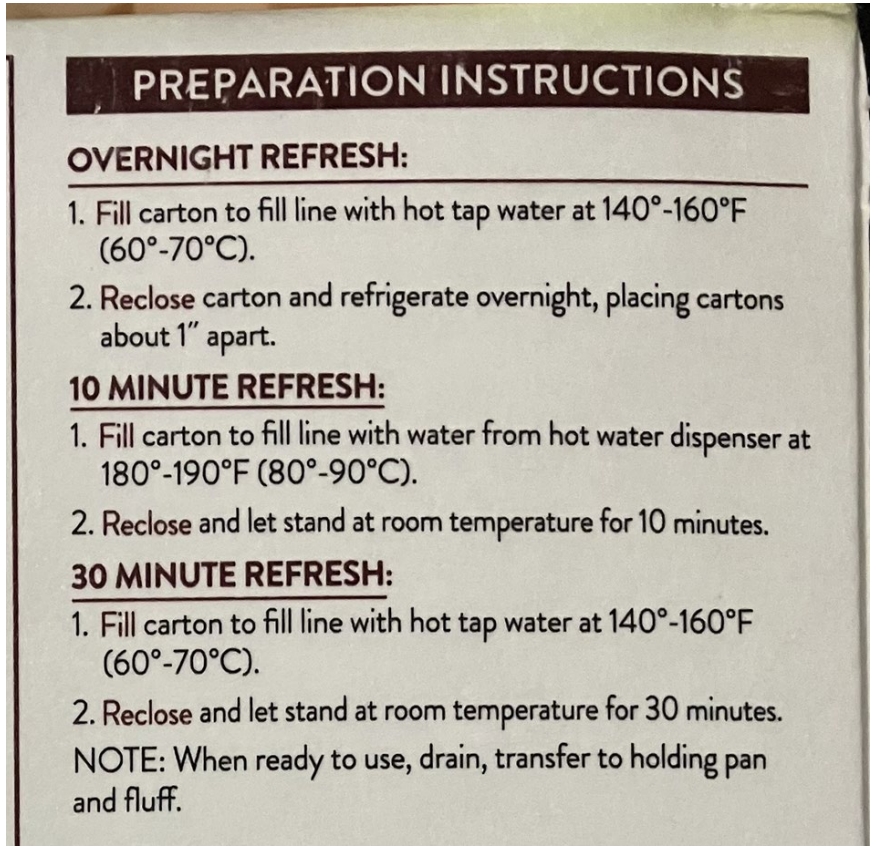
NOTE: When ready to use, drain, transfer to holding pan and fluff.

# How should the product be held after the rehydration refresh?

a. In the pan at the cook's line

b. Following Food Code parameters

c. Doesn't matter



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2. Reclose and let stand at room temperature for 30 minutes.

NOTE: When ready to use, drain, transfer to holding pan and fluff.

A restaurant receives dehydrated mushrooms to use for soups; they place the dehydrated mushrooms in boiling water to rehydrate.

Using the guidance…Is this allowed?

a. Yes
b. No
c. Depends

What information might you request?

Can the mushrooms be rehydrated at room temperature with tempered water?

a. Yes
b. No
c. Depends

Why should the mushrooms not be rehydrated with room temperature water?

# RECOMMENDATIONS FOR OPERATORS AND REGULATORS

# Operator Considerations and Procedures

## Rehydration of Various Foods

Rehydration applies to many foods including powdered animal and plant products, and complex items like noodles and batters.

## Risk of Foodborne Illness

Improper classification of rehydrated foods risks bacterial growth and toxin formation, increasing foodborne illness hazards.

## Operator Best Practices

Operators should follow validated manufacturer instructions, use flowchart guidelines, create SOPs, and train staff effectively.

# Regulator Considerations and Procedures

## Hidden Rehydration Practices

Regulators look beyond obvious practices to identify hidden rehydration methods during inspections and menu reviews.

## Encouraging Manufacturer Instructions

Though enforcement is limited, operators are encouraged to follow manufacturer's instructions for safe food handling.

## Standard Operating Procedures

Operators should develop and train staff on standard operating procedures for proper rehydration and food safety.

# IN CONCLUSION

- **Importance of Safe Handling**
  - Safe handling of rehydrated foods is essential to prevent foodborne illnesses in retail settings.
- **Following Expert Guidance**
  - Operators and regulators must adhere to expert committee guidance for effective risk management.
- **Protecting Public Health**
  - Proper control measures help ensure public health protection from foodborne hazards.



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