Low Water-Activity Foods Safety Series: Part 4 of 4 – Grain Based Foods and Ingredients

**Moderator:** Joshua Gurtler, USDA-ARS, United States

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Joshua Gurtler is a Research Scientist at the USDA/ARS in Wyndmoor, PA, where he has worked for 14 years. Dr. Gurtler’s current work involves interventions for the inactivation of foodborne pathogens in fresh produce, soil, water, compost, and dried foods. Joshua has published numerous peer-reviewed scientific manuscripts, 9 book chapters, is an editor of three books and author of one patent and one patent that is pending. He has served as a member or chair on several IAFP committees. Dr. Gurtler is a co-scientific editor for the Journal of Food Protection. He has delivered numerous scientific research presentations, including invited presentations, in the U.S., Canada, China and Korea. He resides with his wife and three children in Phoenixville, PA.
Deann Akins-Lewenthal, Ph.D. is the Senior Director of Food Safety and Enterprise Laboratory Services for Conagra Brands in Omaha, NE. Her responsibilities include Food Safety, Regulatory Affairs, Policies and Procedures, and Customer Facing Quality for the company. Deann interfaces with internal departments and functions across Quality, Consumer Affairs, Legal, Supply Chain, Risk Management and Environmental Health and Safety to ensure Food Safety and Lab services provide optimal ROI to the business. Deann has been with Conagra Brands for over 12 years in various roles. Deann attended the University of Georgia and received her B.S.A in Biological Sciences and M.S. and Ph.D. in Food Science.

Scott Hood
Antifragile Food Safety Consulting, United States

Scott has worked in the food industry for more than 30 years with a focus on food safety. He is currently doing food safety consulting after retiring from General Mills in 2020. Scott was active in several industry scientific and trade organizations including The International Association of Food Protection, the Consumer Brands Association, and the University of Georgia Center for Food Safety. He served on the National Advisory Committee for Microbiological Criteria in Food and the CDC FSAM Surveillance Working Group. Scott has a BS in Food Science from the University of Wisconsin and a MS and PhD in Food Science from the University of Minnesota.
DRIED READY-TO-EAT CEREAL PRODUCTS

Scott Hood
Antifragile Food Safety Consulting
June 9, 2021
AGENDA

• History of Outbreaks and Events
• Basics of RTE Cereal and Snack Bar Production
• Microbiological Risks
• Control Programs
DRIED RTE PRODUCTS

Historically considered low risk for pathogens

Some findings of Salmonella in dried products such as powdered milk

1996
OUTBREAKS AND EVENTS

• 1998 – RTE Cereal – Salmonella Agona
• 2008 – RTE Cereal – Salmonella Agona
• 2016 – Snack Bars - Listeria monocytogenes
• 2018 – RTE Cereal – Salmonella Mbandaka
BASICS OF CEREAL PRODUCTION

Primary Ingredients → Mix → Cook → Form

Dry → Enrobe → Puff Flake Shred → Dry

Package
BASICS OF CEREAL PRODUCTION

Primary Ingredients → Mix → Cook → Form

- Enrobe
- Puff, Flake, Shred

Post lethality addition
- Ingredients and sanitation focus

Dry → Package
BASICS OF BAKED SNACK BAR PRODUCTION

Primary Ingredients → Mix → Form → Cook → Cool → Dry → Enrobe → Dry → Cool → Package
BASICS OF COLD FORMED SNACK BAR PRODUCTION

Primary Ingredients → Mix → Form → Cool → Enrobe → Dry → Package
MICROBIOLOGICAL RISKS

Ingredients  Processing  Environment
MICROBIOLOGICAL RISKS

- Salmonella
- Listeria monocytogenes
- Mycotoxins

Should other pathogens be considered?
CONSIDER LISTERIA

• Low probability of causing illness
• Potential regulatory risk
• Indication of sanitation practices

Facilities making dry products may have locations that get wet. Focus on areas that are frequently wet when doing environmental monitoring.
CONTROLS FOR SALMONELLA

Prevent Ingress
Enhance Hygiene
Hygienic Design
Prevent or minimize growth
Establish raw material program
Validate control measures
Establish procedures for verification

Source:
CONTROLS FOR SALMONELLA

Environmental Monitoring and Actions

- Prevent Ingress
- Enhance Hygiene
- Hygienic Design
- Prevent or minimize growth
- Establish raw material program
- Validate control measures
- Establish procedures for verification

ROLE OF TESTING

Old Thinking
- Testing is not control
- Can never test enough to make it meaningful

New Thinking
- Testing is verification
- Testing may not find small issues, but should find big issues
ROLE OF TESTING

Old Thinking

Testing is not control
Can never test enough to make it meaningful

New Thinking

Testing is verification
Testing may not find small issues, but should find big issues

Reasons not to do testing

Testing can uncover issues and provide data that may help if epi-based investigations implicate a facility

Reasons to do testing
THE FUTURE

1996

PulseNet International
USA, Canada, Europe, Asia Pacific, Africa, Middle East, Latin America and the Caribbean

2019

WGS
Transforming food safety with a clearer picture of bacterial DNA

1998
First Major Outbreak

2019
What will we find?
THANK YOU

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Questions?

Questions should be submitted to the presenters via the Questions section at the right of the screen.
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