

Essential Tools to Manage Grain and Flour Quality and Food Safety

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IAOM SE Asia Regional Conference and Exposition
Jakarta, October 7, 2019





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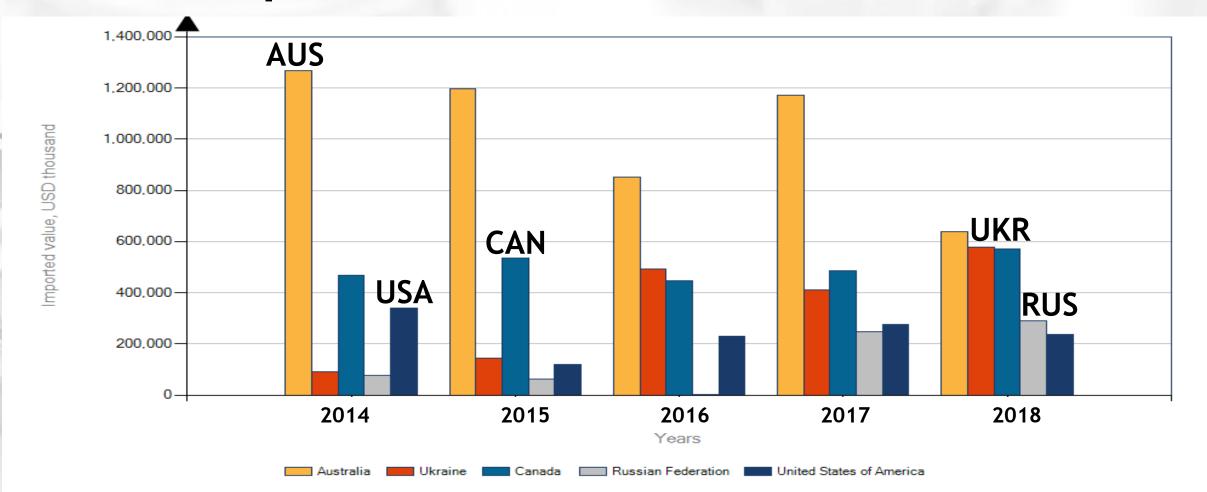
Wheat Imports in SE Asia

South-East Asia wheat import origins share, 2014



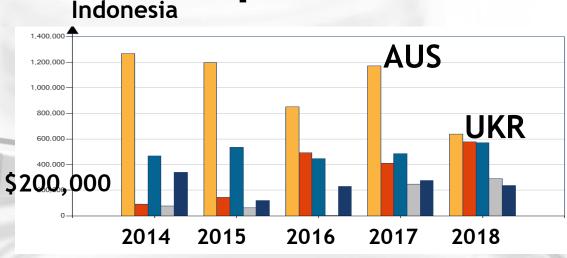


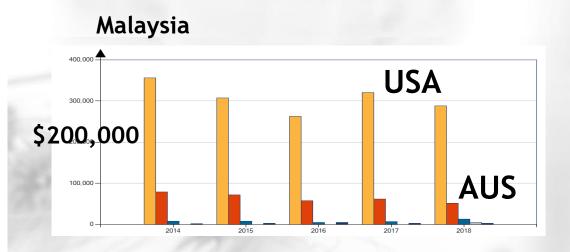
Wheat Imports in Indonesia - 6.1% Total Wheat

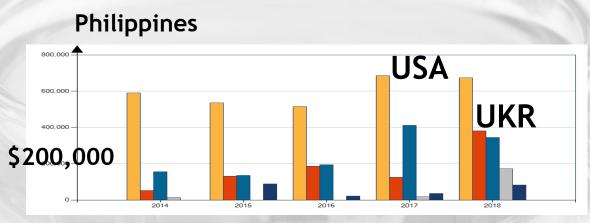


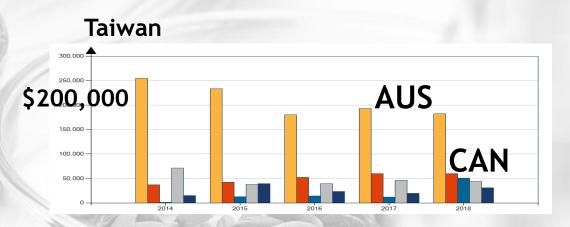


Wheat Imports in Asia

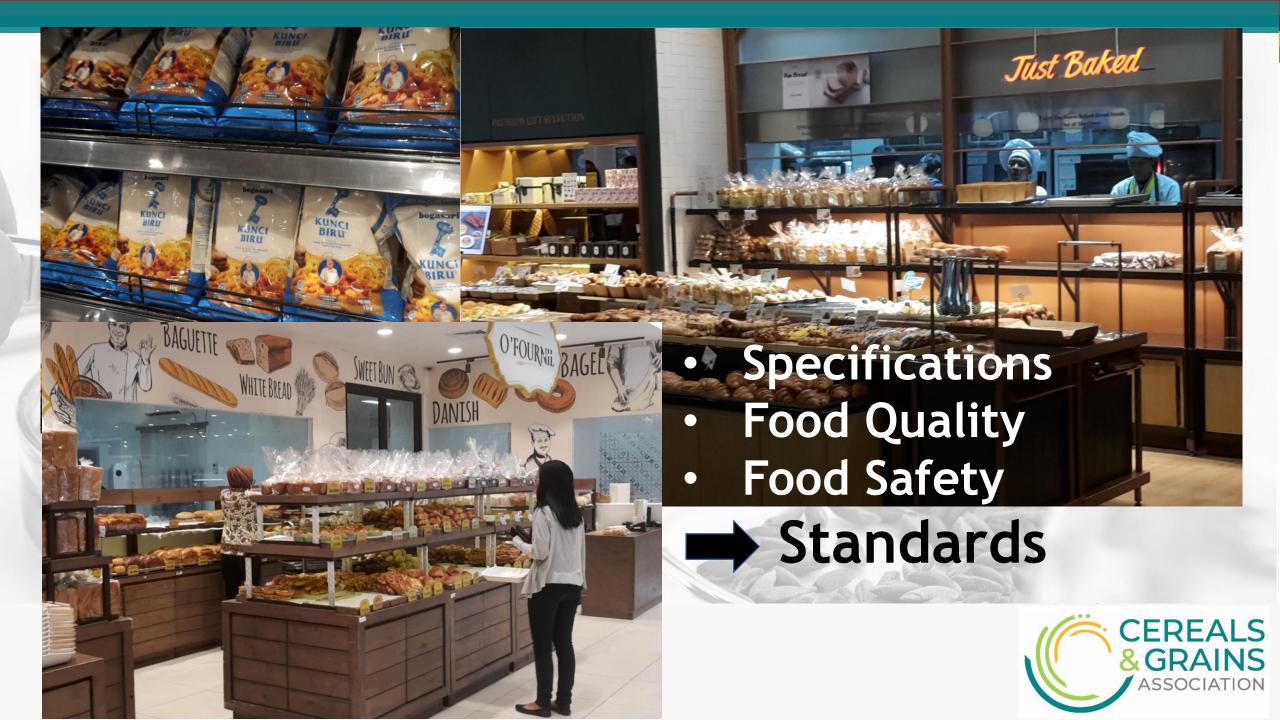










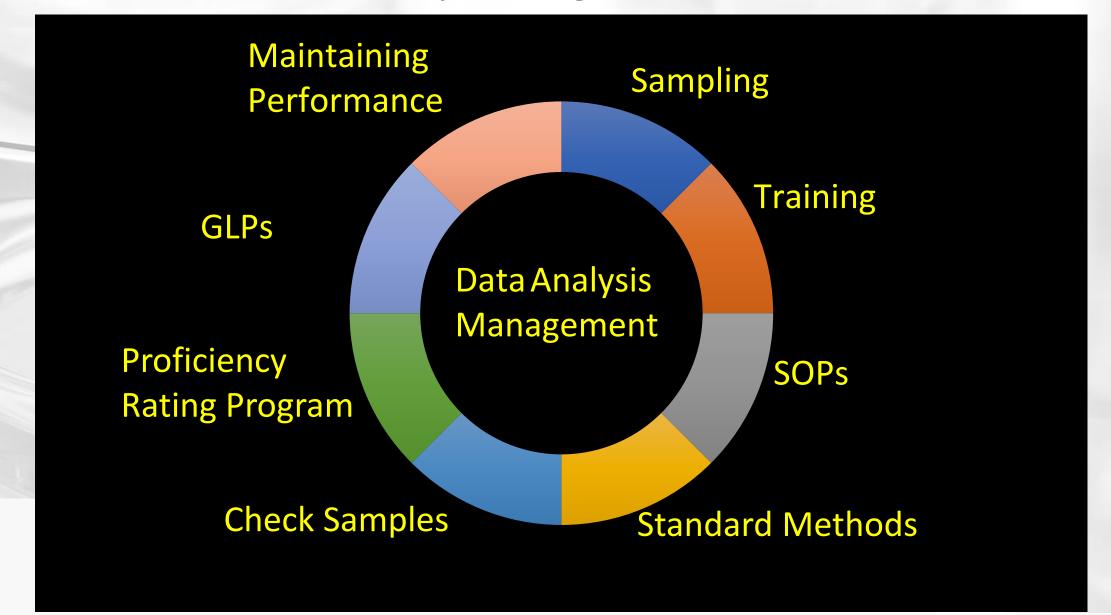




What is Grain and Flour Quality?

Physical Grain	Flour	Dough Rheology
Moisture	Moisture	Moisture
Test Weight	Flour Extraction	Farinograph
Thousand Kernel Weight	Protein	Extensigraph
Grain Hardness	Diastatic Activity and/or Starch Damage	Alveograph
Protein	Flour Purity (Color grade and/or Ash)	Amylograph
Ash	Yellowness	RVA
Falling Number	Brightness	
Screenings	Flour Pasting	
LMA Laboratory Screening		

Elements of Quality Program - the Toolbox



Inspecting the Sample

What is in the sample?

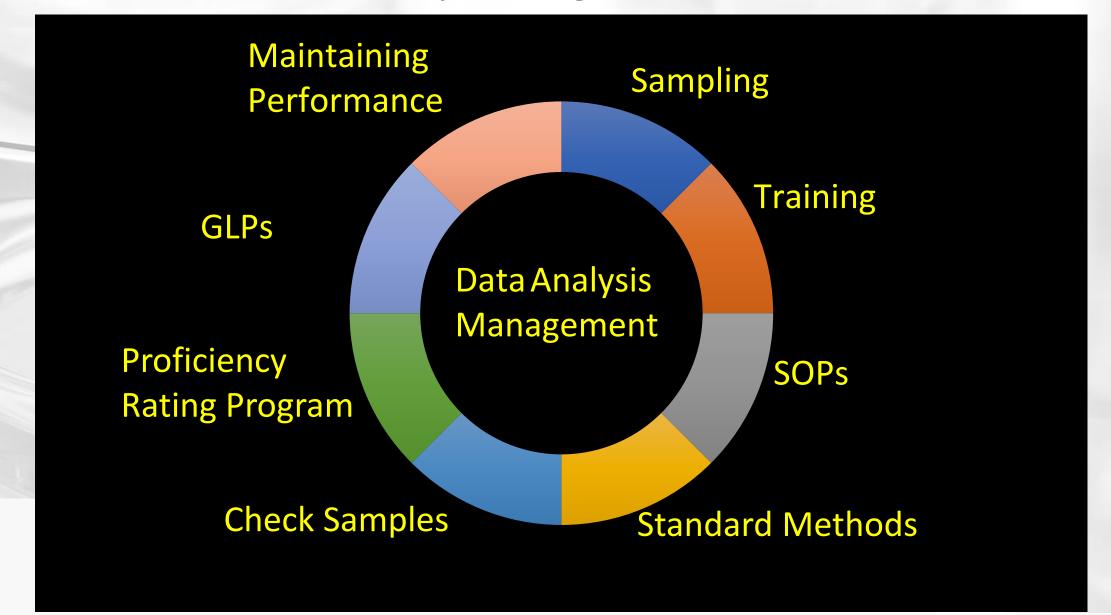




How much sample have you received? Is it representative of the lot?



Elements of Quality Program - the Toolbox



What is a Standard?

A published specification that establishes a common language, and contains a technical specification or other precise criteria and is designed to be used consistently, as a rule, a guideline, or a definition.





What is a Standard?

Standards can be set by

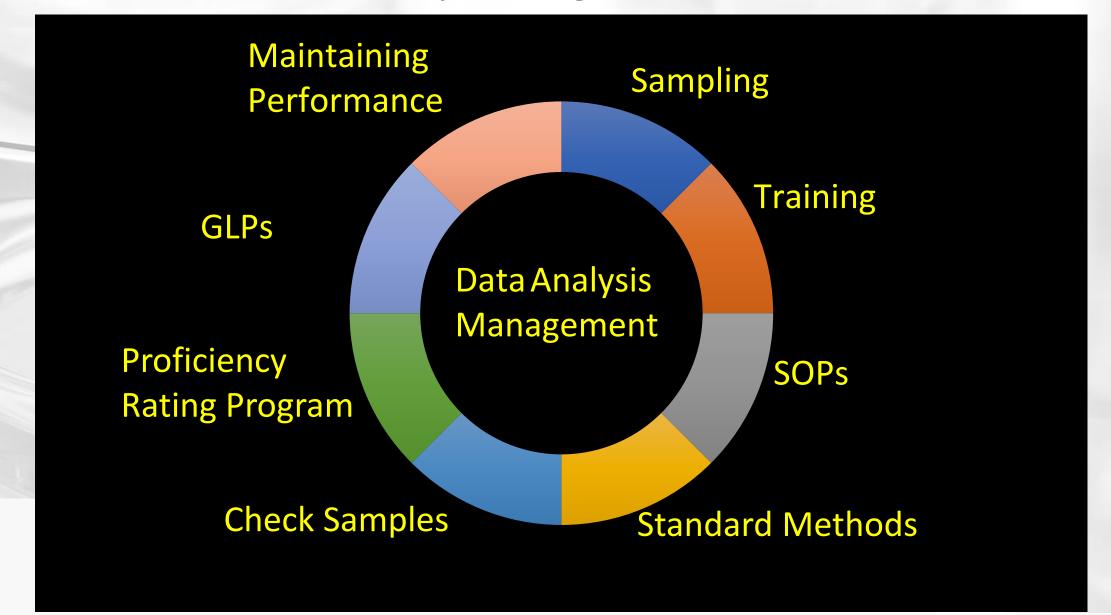
- •governments
- regional and intergovernmental agencies
- standards development organizations
- trade organizations
- •learned societies with input from industry and end-users







Elements of Quality Program - the Toolbox



GLP: Good Laboratory Practice

- GLP a set of principles that provide a framework within which laboratory analyses are planned performed, monitored, reported and archived.
- GLP is sometimes confused with the standards of laboratory safety like wearing safety goggles.



ISO/IEC 17025:2017, General requirements for the competence of testing and calibration laboratories



ISO/IEC 17025:2017

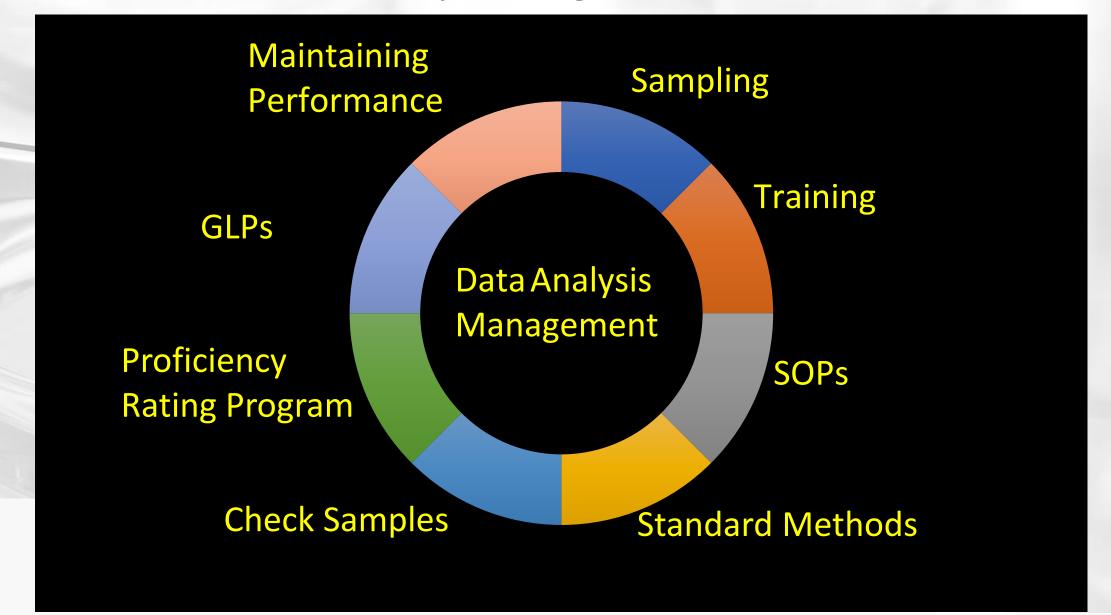
- Sampling included designed to find and correct problems
- Risk assessment results being wrong (to laboratory, customers etc.)
- Resourcing, Process (flow in laboratory), Laboratory and Management Quality Control
- Account for digital management records, equipment operation
- Use latest version of Standard



ISO/IEC 17025:2017, General requirements for the competence of testing and calibration laboratories



Elements of Quality Program - the Toolbox





AACC Approved Methods of

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Archived Methods
Standards Affiliations
Suppliers Guide
Laboratory Proficiency Program
Harmonized Methods



Request a Qu

What's New?

Solvent Retention Capacity Profile - Automated Measurement

Gelatinization Temperature of Milled Rice Flour

Guidelines for Shelf-Life Testing of Food and Ingredients for Key Quality Attributes

Guidelines for Making Japanese Ramen Noodles

Measurement of Crumb Structure of Baked Products by C-Cell

Water-Holding Capacity of Pulse Flours and Protein Materials

AACC Proficiency Rating Program

Focus on Grains / Grain-based Foods

- Subscribers monthly, bimonthly, quarterly
- Homogenous Sample
- Fixed Analytes
- Regular Participation
- Training
- New Products Reference Samples





Examples of Flour Testing Methods

Moisture AACC 44-15.02, NIR; Protein AACC 46-11.02, NIR; Ash; Falling Number; Gluten Index

Subscribe to the AACC Approved Methods of Analysis, 11th Edition

methods.aaccnet.org



AACC Check Samples

- Flour Analysis hard, soft, semolina proximates etc
- Food and Feed Safety microbiology, mycotoxins
- Food and Feed Labeling sugars, fats,
 DF, GF, vitamins and minerals
- Physical Testing Rheology



Food Quality for Your Laboratory

8 servings per con! Serving size	Lairer 1 cup (66eg)	
	1 cep (cegs	
Calories	370	Nutrition Fact
Calories		
	Transportation .	B servings per container
THRM FIRES	7%	Serving size 1 cup (6
Saturated Fet Ig Press Fet Ilia	5%	Amount per sending
Chedestered Dress		Amenda Transfer
Sedimentons	975	Calories 37
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Distany Fiber 5g	18%	Total Fet Sa
Total Tayors Tly		Saturated Fat to
Industry Roy Adde	of Supers 1976	Trains Eaf De
Protein 100		
		Chalesterd Smg
Ritamin Altomop Ritamin Clina	208	Sudium Horag
Mitamin C Imag Mitamin D Imag	100%	Total Carbeltydrate 45g
Warnin Elling	1905	
Ribolavia trecy	735	Twin Sugars 15g
Figit Acid 30thnice	600	includes Hig Added Sugars - B
Thiamin arrosp	106	Protein 12g
Wilamin RU Smrg	1906	
Zinc Trea	105	VII.D 2mog 10% - Calpium 210mg: Zinc 7mg 56% - Blotin 300mog 9
Biodis 30thraco	190%	Zinc Ying Strik - Blotin 300 mag h
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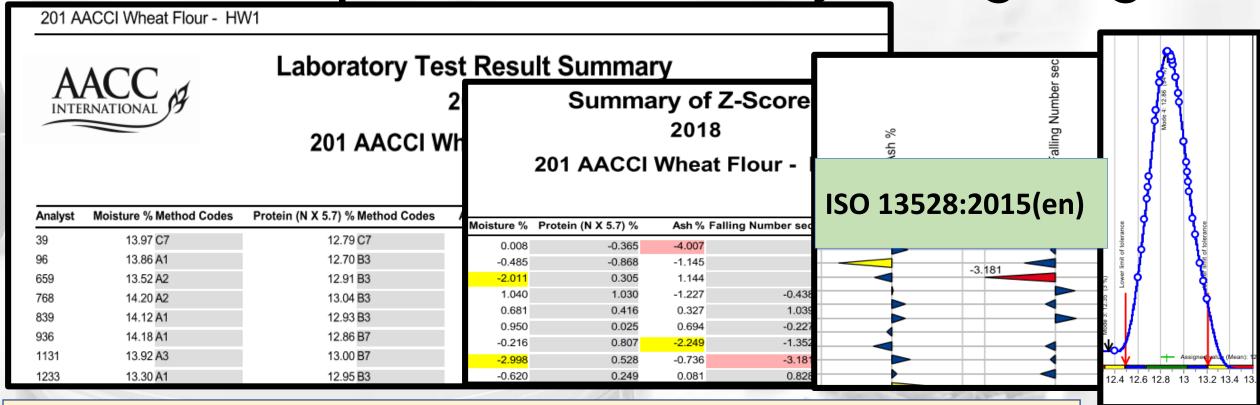
Food Labeling Series
GF, SUGAR, DF, VMP, BAKE, FEED

Subscribe to AACC Laboratory Proficiency Program

aaccnet.org/checksample



Check Samples and Proficiency Rating Program



- Results reviewed
- Managed in test lab

- Comparison other labs
- Problem resolution





Key Food Safety and Security Issues?

Foodborne illness most important food safety issue - caused by

Pathogens - E coli, salmonella, yeasts and molds Mycotoxins - in cereals and grains, pulses, vegetables and oilseeds Chemical Contamination

Heavy metals Need to understand

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Illegal use - v

Illegal use - p • Measure (quantify)

Allergens - peanuts,

Food Adulteration -

Sugar water i formula powo

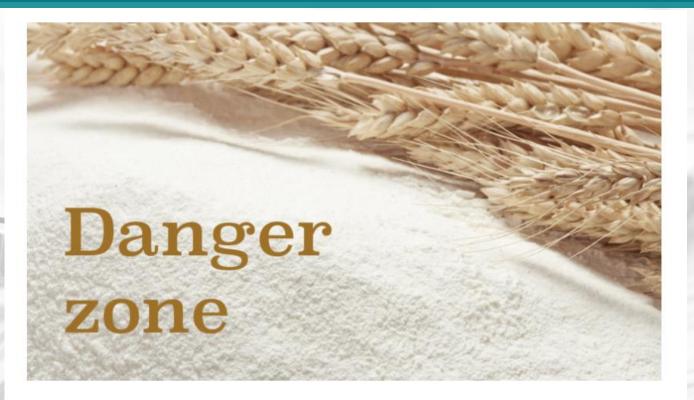
Manage

Communicate

fant

Food Confusion - misinformation, chemicals, product labels





FDA posts expanded flour recall; no word on whether Aldi is mill's only customer

By Coral Beach on May 28, 2019

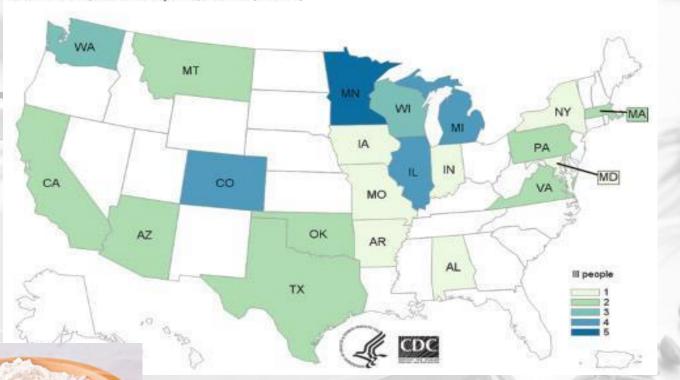
In an expanded recall notice for flour sold by Aldi, the grocery chain' supplier is reminding consumers that the baking staple is made from raw grain and therefore inherently dangerous.





USA - Food Safety Effects Everyone

People infected with the outbreak strains of *E. coli* O121 or O26, by state of residence, as of July 25, 2016 (n=46)



American food supply - one of safest in the world

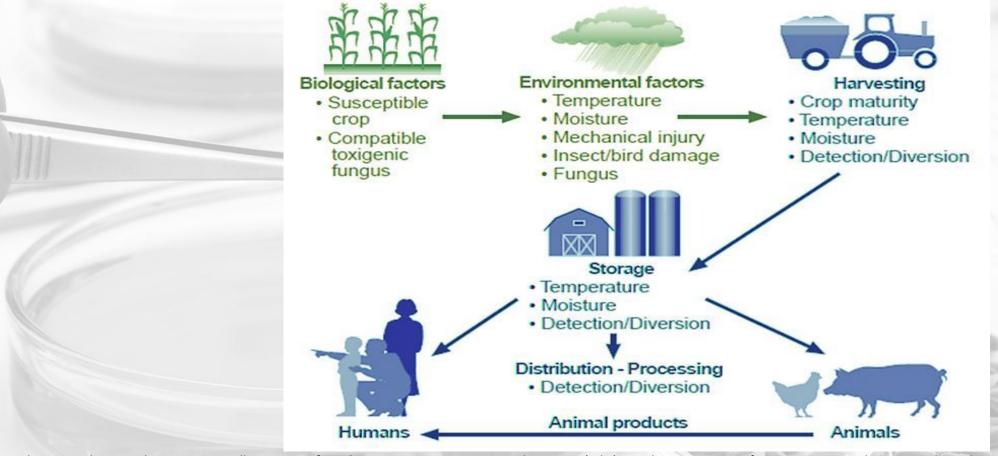
Federal government estimates 48 million cases of foodborne illness each year

- 1 in 6 sick
- Approx. 128,000 hospitalizations
- 3,000 deaths

Raw flour consumed



USA - Food Safety Effects Everyone



Pestka, J. J. and W. Casale. 1989. Naturally occurring fungal toxins. In M. S. Simmons and J. Nriagu (Eds.) Food Contamination from Environmental Sources. John Wiley and Sons, Ltd.

DON Occurrence in Grains: A North American Perspective

http://www.aaccnet.org/initiatives/Documents/CFW-60-1-0032-EP.pdf

(2015)



Questions?

- Educational Opportunities publications, journals Annual Meeting, webinars, workshops, and more Analytical Resources
- AACC Approved Methods of Analysis recognized international standards
- Moisture, protein, dietary fiber, gluten-free, shelf-life
- **❖ AACC Check Samples and Proficiency Rating Programs**
- Technical Committees
- Professional and Student memberships







