

Traceability for Foods: An Industry Perspective

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Methods and Systems for Tracking, Tracing and
Verifying Foods
University of Maryland
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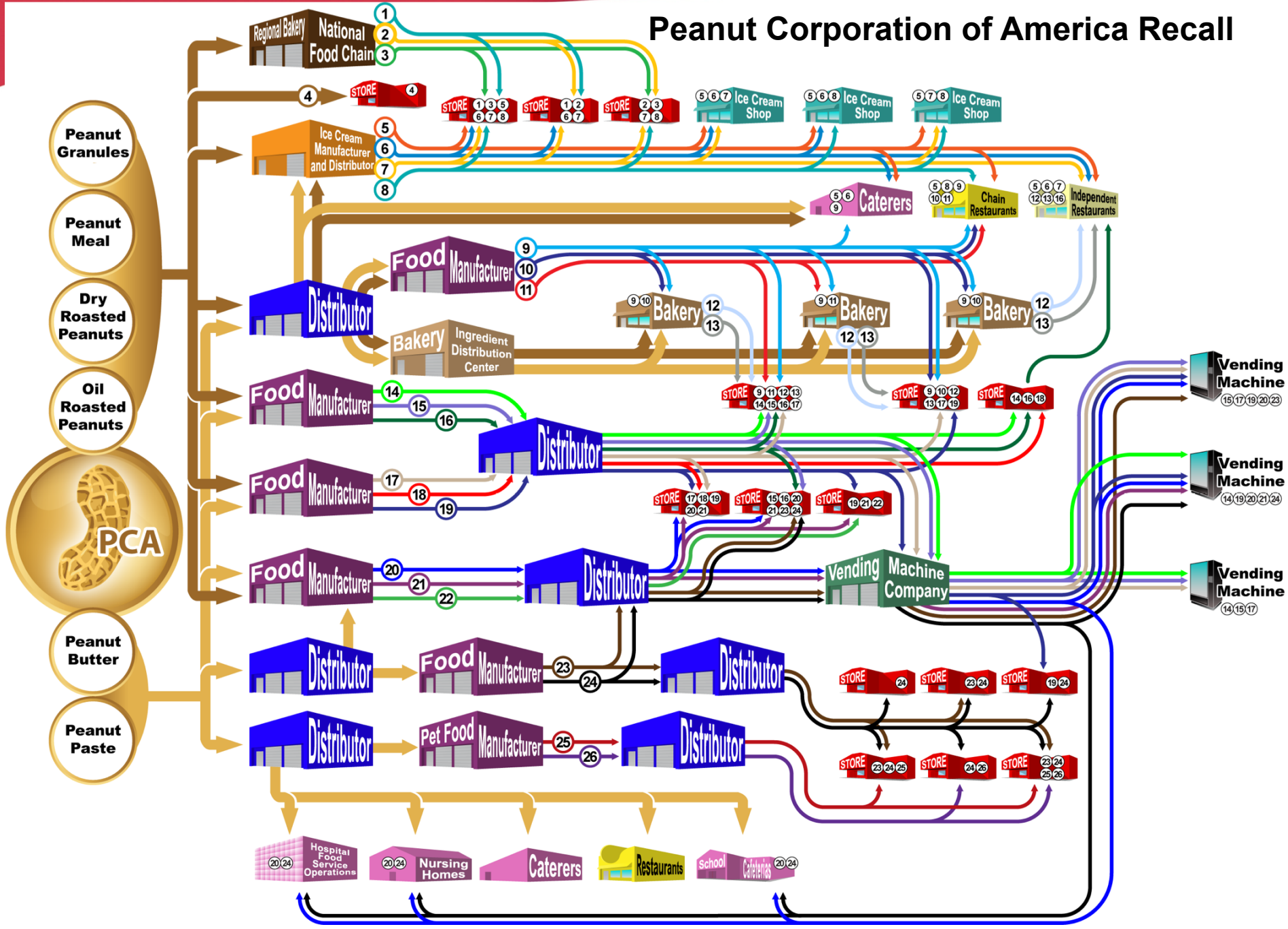


Why Traceability?

Why Traceability?

- Trace Backs
 - Goal to quickly identify source of an outbreak
 - Trace FORWARD to other products which might be implicated

Peanut Corporation of America Recall



Why Traceability?

- Trace Backs
- Troubleshooting/Lessons Learned

Why Traceability?

- Trace Backs
- Troubleshooting/Lessons Learned
 - Eg. Almonds
 - Role of nuts in foodborne illness
 - Importance of process validation
 - Development of new treatments

Why Traceability?

- Trace Backs
- Troubleshooting/Lessons Learned
- Part of a Robust Food Safety System

Consumer Confidence is DOWN

- Recent events have exposed weaknesses in our food safety net and shaken consumer confidence in the safety and security of the food supply both domestically produced and imported



Consumer Confidence in Food Safety is Down

- The number of consumers "completely" or "somewhat confident" in the safety of supermarket food declined
 - 82 percent in 2006
 - 66 percent in 2007

FMI Consumer Trends 2007,
January 2007 survey



Consumer Confidence in Food Safety is Down

- 38 percent of consumers stopped purchasing certain foods in the past 12 months (vs 9% in 2006)
 - spinach (71 percent),
 - lettuce (16 percent),
 - bagged salad (9 percent) and
 - beef (8 percent).

FMI Consumer Trends 2007,
January 2007 survey



Consumer Confidence

- Compared to 2 or 3 years ago, would you say you are **MORE** or **LESS** concerned about foods produced in the U.S.
 - **52% MORE CONCERNED**
 - **4% LESS CONCERNED**
 - **44% NO CHANGE**

Consumer Confidence

- Compared to 2 or 3 years ago, would you say you are **MORE** or **LESS** concerned about imported foods
 - **68% MORE CONCERNED**
 - **3% LESS CONCERNED**
 - **28% NO CHANGE**
 - **1% DON'T KNOW**



How to WE Maintain Food Safety and Improve Confidence?

Supply Chain Management

Supply Chain Management

- What is “Supply Chain Management?”

Due diligence to assure that products received from suppliers meet required regulatory, legal, and contractual standards of safety.

Importance of Supply Chain Management in Food Safety

- Legal Considerations
 - Regulatory compliance

Importance of Supply Chain Management In Food Safety

- Legal Considerations
 - Regulatory compliance
 - Liability

Importance of Supply Chain Management in Food Safety

- Legal Considerations
- Financial Considerations
 - Price vs Quality
 - “Cheaper” ≠ less expensive!

Importance of Supply Chain Management in Food Safety

- Legal Considerations
- Financial Considerations
 - Price vs Quality
 - Value of Brand
 - Commercial brand
 - Reputation of exporting country

Importance of Supply Chain Management in Food Safety

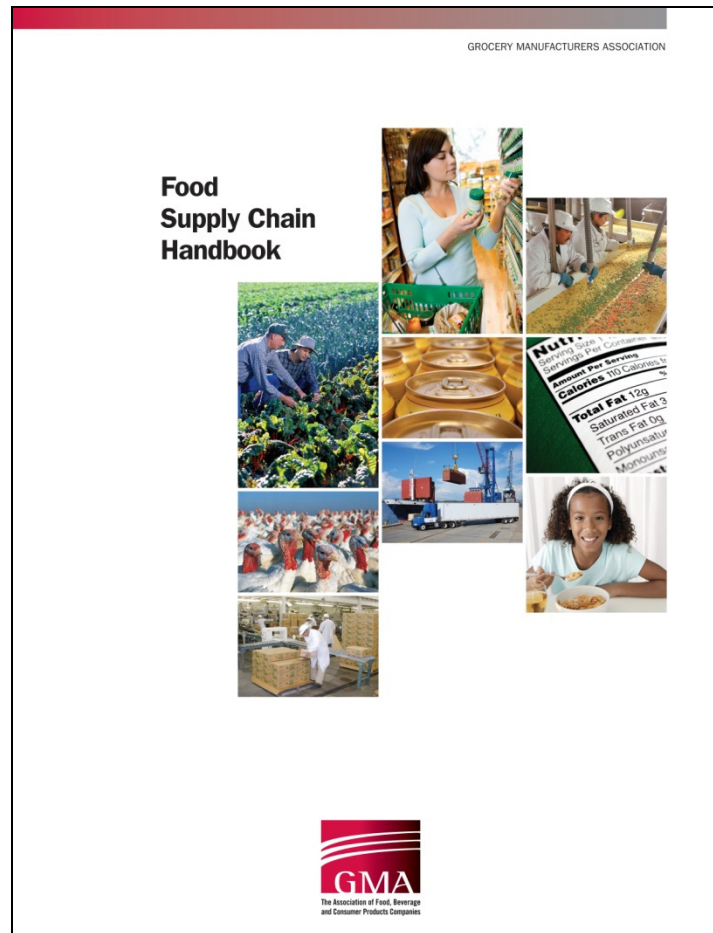
- Legal Considerations
- Financial Considerations
- Consumer
 - EXPECT and ASSUME food to be safe
 - Put responsibility and blame on both product AND exporting country

GMA Food Supply Chain Handbook

Available in:

English
Spanish
Mandarin
French
Russian

www.gmaonline.org



Supplier Programs in Food Supply Chain Handbook

- Hazard Analysis and Critical Control Points (HACCP)
- GMPs/GHPs
- GAPs and GAqPs where applicable
- Employee training
- Environmental monitoring
- Allergen control
- Foreign material control
- Label control programs
- **Product and ingredient tracing**
- Product testing/hold and release
- Recall/crisis plans
- ...

Key Concept

Preventing production of contaminated foods is much more effective than reliance on detection of contaminated goods in distribution and corrective actions.

What to Trace?

What to Trace?

- Final Product
 - Consumer units
 - Cans of soup
 - Boxes of cereal
 - Carton of eggs

What to Trace?

- Final Product
 - Consumer units
 - Relatively Easy!

What to Trace?

- Final Product
- Bulk shipments
 - Pallets of consumer product
 - Rail cars of grain

What to Trace?

- Final Product
- Bulk shipments
 - Relatively Easy!

What to Trace?

- Final Product
- Bulk shipments
- **Components**
 - Food ingredients
 - Direct additives (eg. salt, vitamins)
 - Indirect additives (eg. packaging components)

A Multinational Loaf

Amy Schoenfeld: New York Times, June 15, 2007

INGREDIENTS:

- **Wheat gluten**
- **Honey**
- **Calcium proprionate**
- **Guar gum**
- **Flour enrichments**
- **Beta-carotene**
- **Vitamin D₃**

Source: Sara Lee



A Multinational Loaf

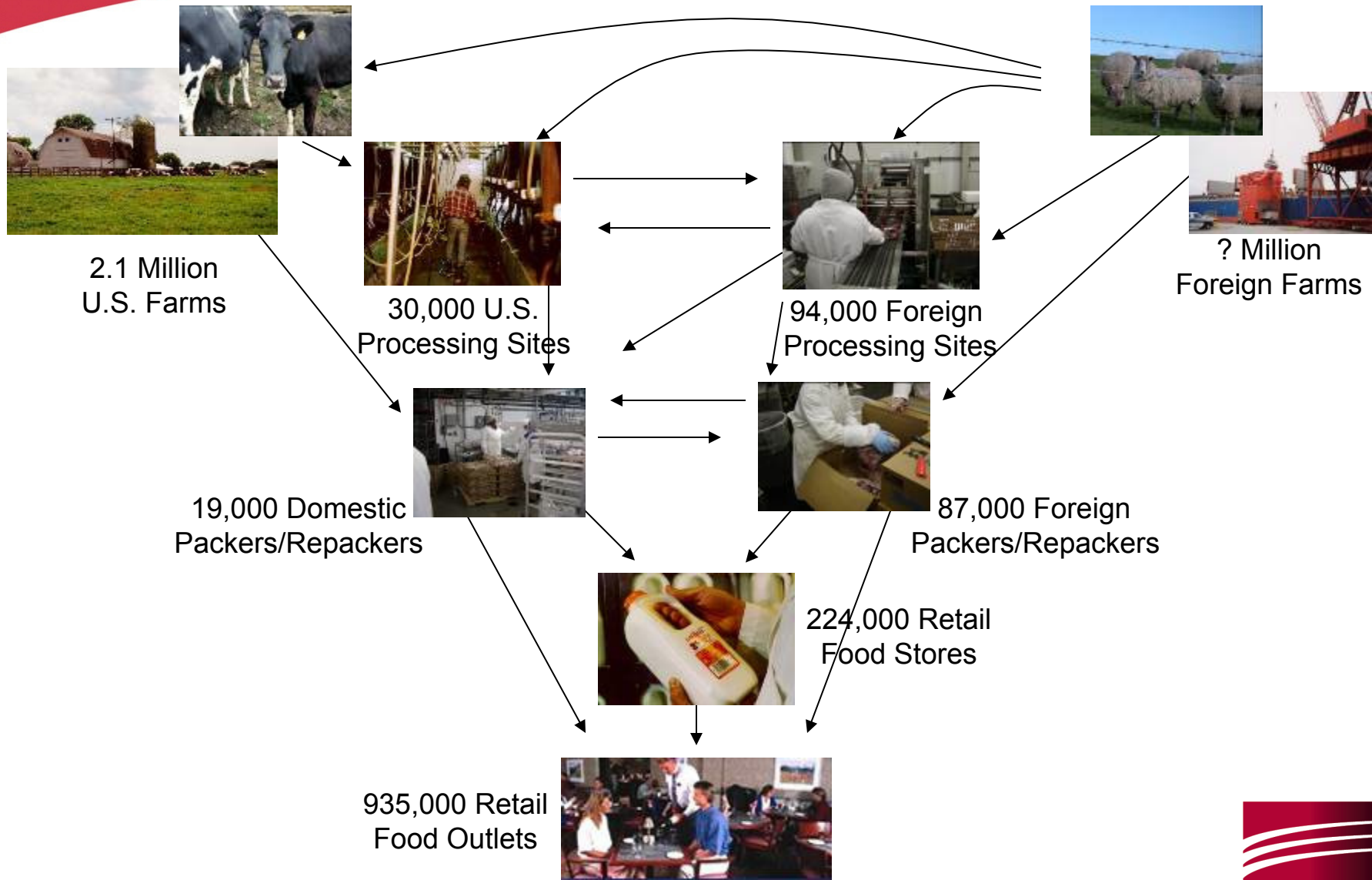
Amy Schoenfeld: New York Times, June 15, 2007



- **Wheat gluten** – France, Poland, Russia, Netherlands, Australia
- **Honey** – China, Vietnam, Brazil, Uruguay, India, Canada, Mexico, Argentina
- **Calcium proprionate** – Netherlands
- **Guar gum** – India
- **Flour enrichments** – China
- **Beta-carotene** – Switzerland
- **Vitamin D₃** – China

Source: Sara Lee





Courtesy of Shaun Kennedy, NCFDP



2.1 Million U.S. Farms



30,000 U.S. Processing Sites



19,000 Domestic Packers/Repackers



224,000 Retail Food Stores



935,000 Retail Food Outlets



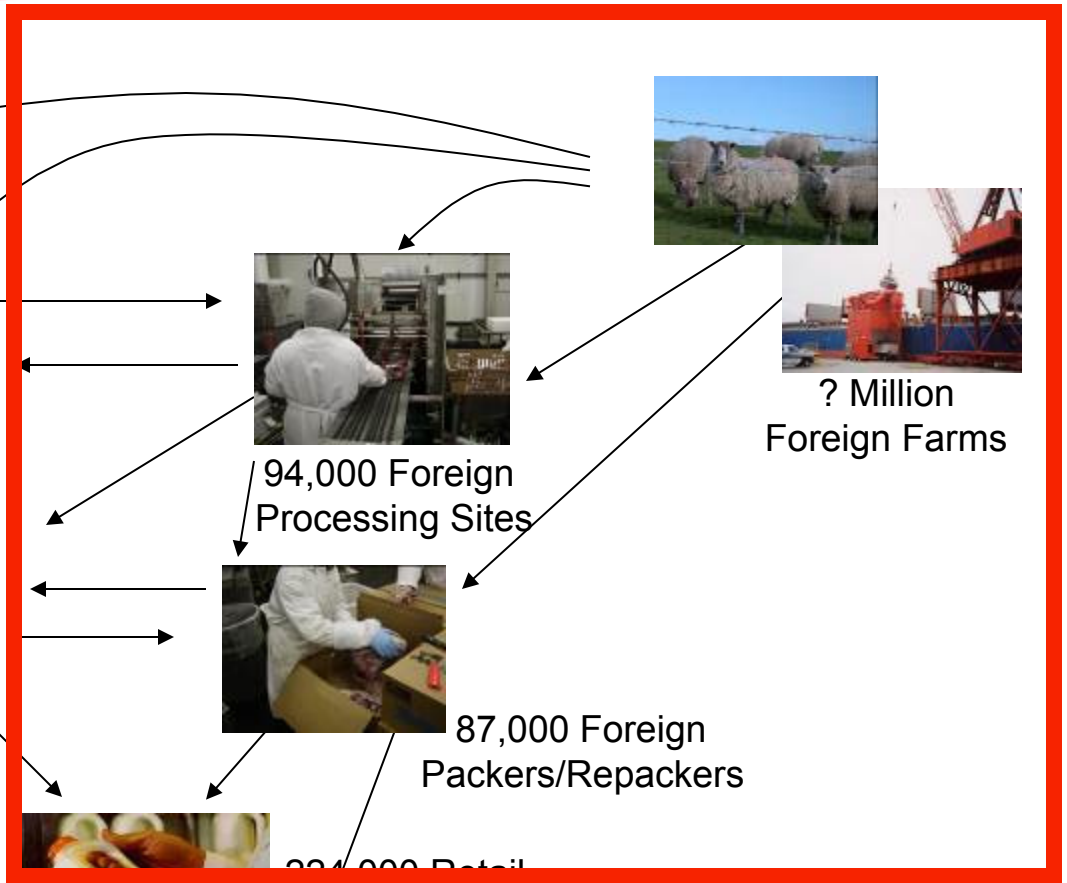
? Million Foreign Farms



94,000 Foreign Processing Sites



87,000 Foreign Packers/Repackers



Supply Chain Complexity

- Unknown millions of foreign farms
 - Many very small (1 hectare or less)
- 94,000* foreign processing facilities
- 87,000* foreign packers/repackers

Supply Chain Complexity

One Burger Contains:



bleached wheat flour
malted barley flour
thiamine
riboflavin
Niacin
folic acid
reduced iron
Water
corn syrup
sesame seeds
soybean oil
Yeast
Salt
calcium sulfate
calcium carbonate
calcium silicate
soy flour



lettuce



dehydrated onions

baking soda
wheat gluten
calcium propionate
enzymes
mono- and diglycerides
diacetyl tartaric acid esters
ethanol
sorbitol
polysorbate 20
potassium propionate
sodium stearoyl lactylate
corn starch
ammonium chloride
ammonium sulfate
calcium peroxide
ascorbic acid
azodicarbonamide



Grill Seasoning

Salt
Pepper
cottonseed oil
soybean oil



Milk
Water
sodium citrate
sodium phosphate
artificial color
acetic acid
Enzymes



Special Sauce

Soybean oil
distilled vinegar
egg yolks
sugar
corn syrup
spice extractives
xanthan gum
prop. glycol alginate
potassium sorbate
garlic powder
caramel color
Turmeric
EDTA

milkfat
cream
salt
sorbic acid
cheese culture
soy lecithin
starch



USDA inspected beef



pickles
water
HF corn syrup
onion powder
spice
salt
mustard flour
sodium benzoate
mustard bran
hydrolyzed proteins
paprika
calcium disodium


Cucumbers
water
Vinegar
Salt
calcium chloride
Alum
natural flavorings
polysorbate 80
turmeric



Courtesy of Shaun Kennedy, NCFDP

What to Trace?

- Final Product
- Bulk shipments
- **Components**
 - NOT so Easy or Simple!



Necessity for Tracing ALL Components at ALL points in the Supply Chain?

Necessity for Tracing ALL Components at ALL points in the Supply Chain?

- Goal-protect consumers?
 - Get products off the shelf!!
 - Notify consumers

Necessity for Tracing ALL Components at ALL points in the Supply Chain?

- Goal-protect consumers?
- Are ALL components of equal importance
 - “Sensitive” ingredients
 - Those ingredients that have highest risk of contributing to illness or injury

Necessity for Tracing ALL Components at ALL points in the Supply Chain?

- Goal-protect consumers?
- Are ALL components of equal importance
 - “Sensitive” ingredients
 - Economically important ingredients
 - Protein (eg. melamine)
 - Counterfeiting (eg. exotic juices)



PRODUCT RECALL PORTAL

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Challenges and Questions

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- Actual Impact on food safety?

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- Actual Impact on food safety?
- Data Management
 - Security
 - Storage
 - Privacy and Commercial/confidential information

Challenges and Questions

- Actual Impact on food safety?
- Data Management
- Cost vs benefit

Summary

- International Trade in Foods and Agricultural Products Will Continue to Increase

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- The complexity of the supply chain makes traceability a technical, logistical, and financial challenge

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- There ARE elements of traceability that can improve food safety and benefit both consumers and the food industry

Summary

- International Trade in Foods and Agricultural Products Will Continue to Increase
- The complexity of the supply chain makes traceability a technical, logistical, and financial challenge
- There ARE elements of traceability that can improve food safety and benefit both consumers and the food industry
- Traceability must be tailored to specific situations

Questions ???

