



INTERNATIONAL PERSPECTIVE ON FOOD SAFETY MANAGEMENT

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E Coli 0104:H4 Outbreak in Germany

Chronology

- Beginning 2 May 2011, German health authorities reported the outbreak of bloody diarrhea accompanied by hemolytic-uremic syndrome (HUS)
- On 22 May 2011, German health authorities said “Clearly, we are faced with an unusual situation”, one day after the first death in Germany
- Result of the first case study on May 25th: Food could be involved, especially tomatoes, cucumbers and lettuce
- Ban on cucumbers from Northern Germany



**“Spanish”
E Coli?**



26 May 2011

On 27 May 2011, German officials issued an alert distributed to nearby countries, identifying organic cucumbers from Spain and withdrawing them from the market



31 May 2011 Last updated at 11:48 GMT

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E. coli cucumber scare: Cases 'likely to increase'

A deadly E. coli outbreak in Europe is expected to worsen in coming days, a senior German scientist has said.

Fourteen people have died in Germany and one [woman](#) has now died in Sweden after a trip to Germany.

"We hope the number of cases will go down but we fear it will worsen," said Oliver Grieve, of the University Medical Centre Schleswig-Holstein, where many victims are being treated.



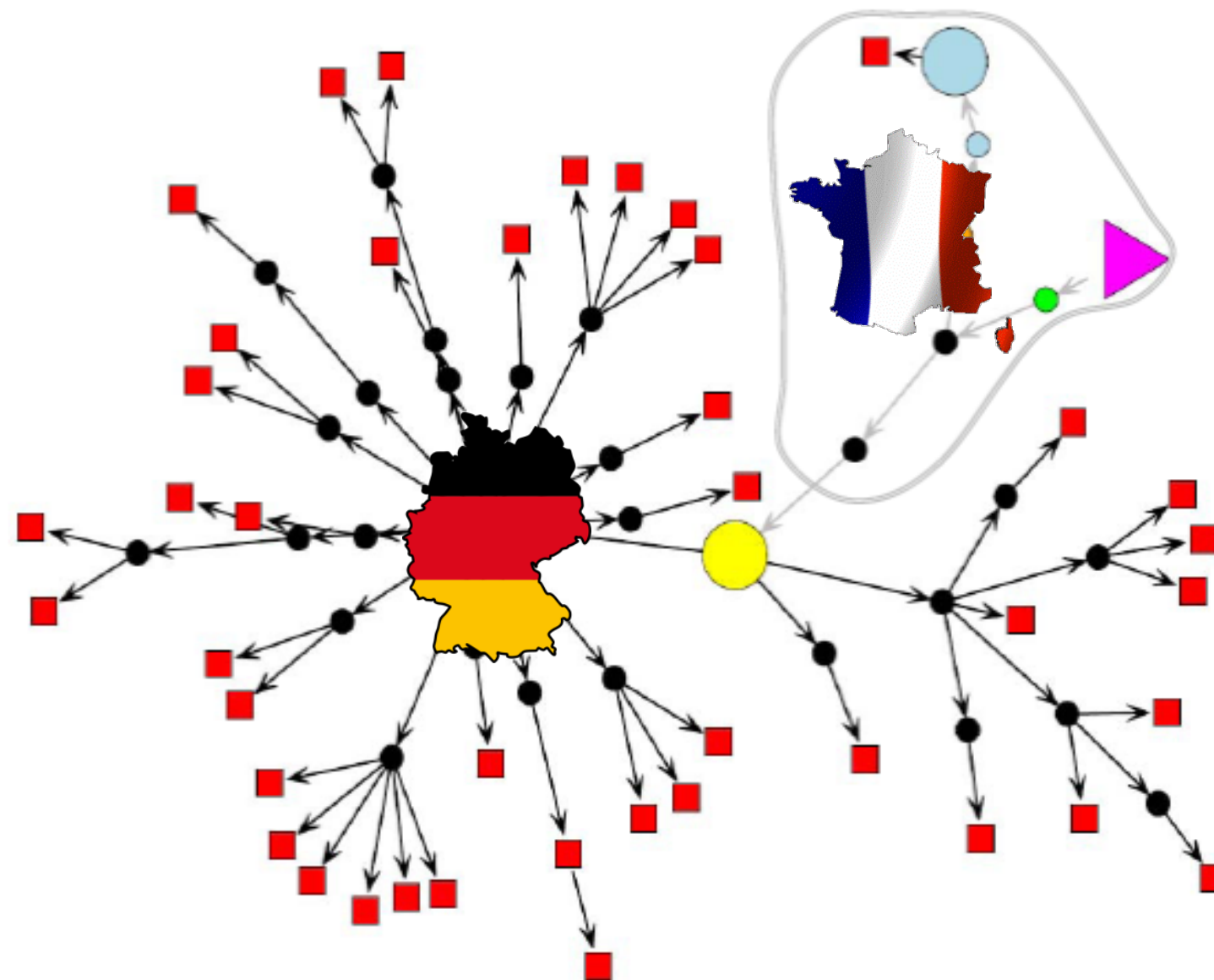
The Andalucian agriculture minister ate a cucumber to show her confidence in the vegetables





- **On 4 June, German and EU officials had allegedly been examining data that indicated that an open catering event at a restaurant in Lubeck, Germany, was a possible starting point of the on-going deadly E. coli outbreak in Europe.**
- **Recipe-based restaurant cohort study identifies fenugreek sprout consumption as cause of disease in Lübeck restaurant**
- **On June 10th consumers were informed that they can eat raw tomatoes, cucumbers and lettuce, but not raw sprouts**

The link between the French and the German outbreak



- Sprout producer
- German distributor
- Outbreak clusters at the end of supply chains
(restaurants, canteens, supermarkets, groceries)
- French distributor
- ➔ Way of sprouts
- ➔ Way of seeds
- ▲ Seed producer
- ● Distributor in other member states



Fenugreek seeds imported from Egypt either in 2009 and/or 2010 have been found to be epidemiologically implicated in both the German and the French outbreaks

“There is, however, still much uncertainty about whether this is truly the common cause of all the infections as there are currently no positive bacteriological results”

Consumers should be advised not to grow their own sprouts and to ensure that all types of sprouts are thoroughly cooked before consumption.

EFSA on 20th July



5 July 2011 Last updated at 18:10 GMT



E. coli: EU bans Egyptian seeds after fenugreek link

The EU has banned the import of some Egyptian seeds and beans after fenugreek was linked to the E. coli outbreaks in Germany and France.

The European Food Safety Authority linked a batch of fenugreek seeds to outbreaks which claimed 49 lives.

Imports of seeds and beans "for sprouting" will be frozen until 31 October, EU officials said.

All fenugreek seed imported from one particular Egyptian company since 2009 would be destroyed, they added.

Seeds and spores

Member states decided to impose the ban after seeing the European Food Safety Authority (EFSA) report, the European Commission said in a news release.

"The decision provides that imports of Egyptian seeds and beans for sprouting are suspended until 31 October," it added.



Egyptian fenugreek seeds have been linked to both outbreaks

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UK Food Standards Agency advice

- Do not eat sprouted seeds such as alfalfa, mung

Sunday, December 4, 2011

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Latest Headlines: [PM El-Ganzouri offers to cooperate with ElBaradei](#)

EU team in Egypt for E. coli review

[The Egyptian Gazette](#)

Saturday, July 30, 2011 05:50:43 PM

CAIRO - A delegation from the European Union and the World Health Organisation (WHO) will visit Egypt this week, as they consider lifting a ban on importing Egyptian agricultural products, suspected of being infected with E. coli bacteria, the official Middle East News Agency (MENA) reported.



No c

"Officials from the WHO say their organisation is ready to help Egypt with food safety," said Saad Nassar, an adviser to Egypt's Agriculture Ministry.

He added that the European Union team will review all stages of production, exporting and distribution.

"The EU could lift the ban on the importation of Egyptian seeds after the visit," stressed Nassar.





Impact

Global situation of *E. coli* O104:H4 Outbreak

In total, 16 countries in Europe and North America have reported 3941 cases of *E. coli* O104:H4 infection, including 52 fatalities.

Country
Austria
Canada
Czech Republic
Denmark
France
Germany
Greece
Luxembourg
Netherlands
Norway
Poland
Spain
Sweden
Switzerland
United Kingdom
United States of America
Total

Impact

People kept away from eating salads completely

Trade in several countries are affected

Farmers in Germany, then in Spain, and later in Egypt were affected



Cost



- Estimate of the cost on damage, human loss and suffering at **USD 2840000000** (FPJ 2011).
- The total compensation attributed to the loss in agriculture income for the member countries in the EU estimated as **227 Million Euros**.

United States of America



September 2: The Colorado Department of Public Health and Environment (CDPHE) notifies the Centers for Disease Control and Prevention (CDC) of seven ill persons with listeriosis (*Listeria* infection)

September 5: Cantaloupes are collected by CDPHE for *Listeria* testing from the home of an ill person

September 6: [PulseNet](#) defines outbreak strains in CO patients and identifies an ill person in NE and another in TX, each infected with an outbreak strain of *Listeria*



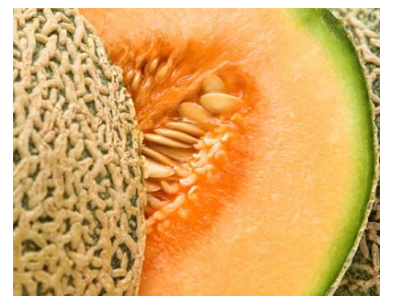
September 8: CDC asks states to use the supplemental questionnaire created by CDPHE to learn more about cantaloupe eaten by ill persons. Food and Drug Administration (FDA) begins investigation with initial information collected by CDPHE to identify sources of cantaloupe eaten by ill persons. Cantaloupes are collected by CDPHE for *Listeria* testing from retail locations where ill persons reported buying cantaloupes

September 9: CDPHE announces that cantaloupes are the likely cause of illness and warns high-risk CO residents not to eat them. Cantaloupes are collected by FDA for *Listeria* testing from retail locations where ill persons reported buying cantaloupes.



September 10: FDA and CDPHE visit Jensen Farms for an inspection and to collect environmental and product samples.

October 18: FDA issues a warning letter to Jensen Farms based on the presence of the outbreak strains of *Listeria* in environmental and cantaloupe samples taken on 9/10.



Epidemiology

Ages ranged from <1 to 96 years, with a median age of 78 years. Most ill persons were over 60 years old.

Thirty-three outbreak-associated deaths were reported. Among persons who died, ages ranged from 48 to 96 years, with a median age of 81 years.

Fifty-eight percent of ill persons were female.

Seven of the illnesses were related to a pregnancy; three were diagnosed in newborns and four were diagnosed in pregnant women. One miscarriage was reported.





China

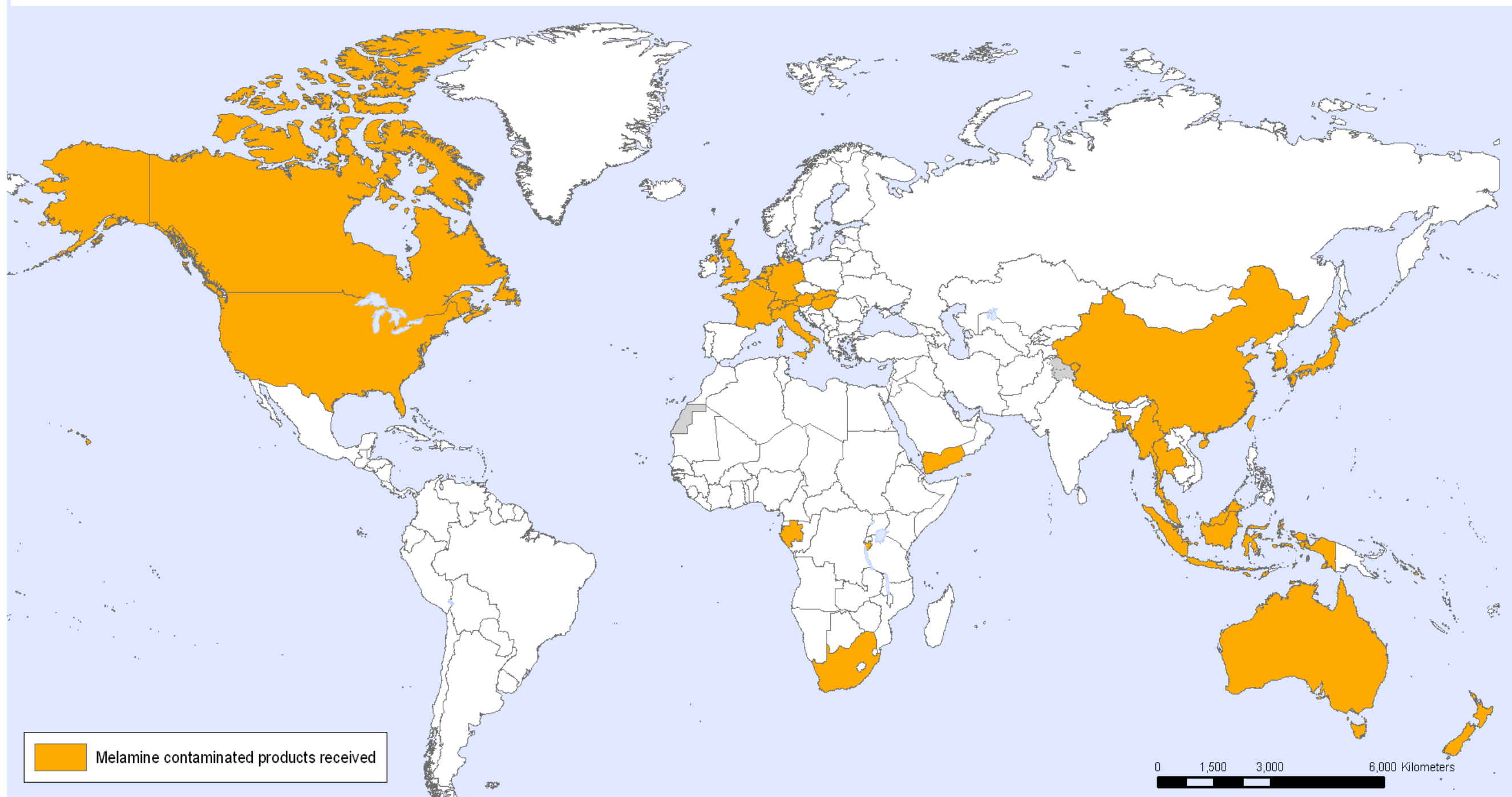




2008 milk scandal

- In November 2008, China reported an estimated 300,000 victims, with six infants dying from kidney stones and other kidney damage, and a further 860 babies hospitalised
- The World Health Organization referred to the incident **as one of the largest food safety events it had had to deal with in recent years**, and that the crisis of confidence among Chinese consumers would be hard to overcome. A spokesman said the scale of the problem proved it was "clearly not an isolated accident, [but] a large-scale intentional activity to deceive consumers for simple, basic, short-term profits."

Country received melamine contaminated products



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization
Map Production: Public Health Information
and Geographic Information Systems (GIS)
World Health Organization



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Food Safety In South America

South American countries are very focused on the export market. Brazil for example has 41% of the world poultry market and slaughters 5 Billion poultry in an year

Brazil and Argentina have different standards for exports and domestic production.

Double standards do exist (Foods that are exported have a higher standard)



Food Safety In South America

There has been a considerable growth in the retail sales, from what was 15-30% of total consumption in 1980s, retail sales now are about 50-70% in 20 years





- Food Safety system responsibilities are shared by several agencies
- Ecuador, Chile and Peru have inter-ministerial agency for developing food safety programs



Food Safety In South America

Inter-America Network of Food Testing laboratories

The INFAL has as general objectives:

- (a) To achieve the methodological equivalence of the food analysis laboratories.
- (b) To promote the implementation of equivalent systems of quality management in the laboratories of the INFAL.
- (c) To strengthen scientific and technical cooperation among the countries members.



Africa

- **Formal surveillance does not exist in most countries. However, 700000 deaths occur annually from food and waterborne diseases**
- **Leading cause of food and waterborne illness, Cholera accounts for about 74% of deaths.**
- **One outbreak of Cholera cost 36 Million USD.**



Africa

- Salmonella, Hepatitis A , EHECs, etc are generally not considered life threatening, but in Africa where there are 25 Million people with HIV/AIDS, these illnesses can be life threatening

Lack of timely medical care is another issue

- South Africa has national programs and has several initiatives now in the retail sector

Message from Africa

“The Africa Association for Food Protection (AAFP) wishes to harness the talents of all Food safety professionals, individuals and companies worldwide interested in Food safety in this continent to help curb the growing problems of Foodborne illnesses affecting its people. While statistics indicate that there are more deaths from Foodborne illnesses in the African continent than Malarial deaths, there currently remains a dearth of funding for Food Safety Research in Africa. The AAFP currently has no source of funds and barely leaves on the generosity of its founding members. We are now in the process of collaborating with the governments in the continent, but firmly resolve to avoid their interference with our activities. The student population in the association is improving steadily. We hope to mobilize the students to diffuse our activities to the people at the grassroots in the various sub-regions.”



Courage Saba

Managing Futures Challenges of Food Safety



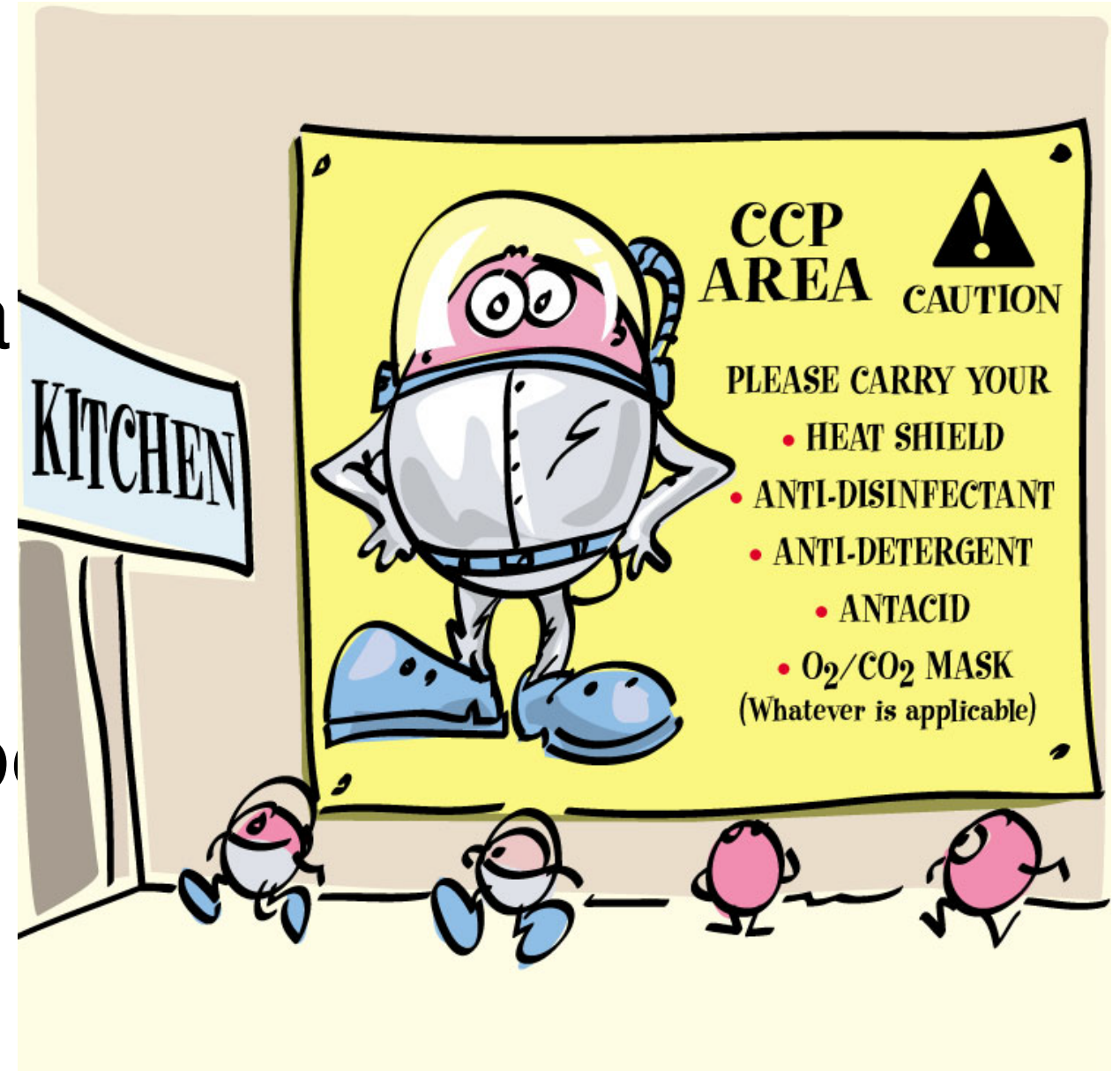
1. Are foodborne illnesses really increasing?

The bar in terms of food safety management is raised because of

- Increasing expectations from consumers
- Increasing ability to detect hazards and sources of foodborne illnesses
- Better detection of chemicals
- Advancing food safety knowledge
- Role of media

2. Pathogens

- O104:H4 outbreak strain was an enteroaggregative E.Coli (EAEC or EAggEC) type that has acquired Shiga toxin genes, presumably by horizontal gene transfer.
- The bacteria was found to be resistant to at least 14 antibiotics



E.Coli 0104: H4 Outbreak in Germany- More to think about...

- whether the source might turn out to be bioterrorism; whether this previously rare strain of *E. coli* is likely to become common now;

- whether the new strain was really unusually virulent or just looked that way because a lot of milder cases went untested;

- whether the benefits of eating suspect raw vegetables outweighed the risks even during this serious outbreak; etc.





2. Pathogens

Epidemiology –

A high number of cases affected 86% adults aged 18 years or older, particularly Women (67%), instead of the normal high-risk groups such as the young children and the elderly.

There were 68% and 59% females among the HUS and EHEC cases respectively. The median age was 43 years for HUS cases and 47 years for the EHEC cases.



3. Limitations in Testing and Analysis

“Germany provided an update on the number of food samples tested, none are STEC positive so far. 1500 samples (802 samples on vegetables) have been taken with focus on cucumbers, tomatoes and leavy salad. Food-business-operators have now been requested to provide the results of private sampling: 660 samples were reported the last two days (all negative). “

4. Risk Management

Germany:

- Improvements in investigative techniques as early procedures failed to identify the source of the outbreak.
- During the initial days, different and incomplete messages from various agencies involved in this outbreak led to some avoidable confusion.
- Better coordination among all agencies involved is essential (coordination was more evident in the case of Cantaloupe outbreak in the US)

5. Do Harsh Punishments work?

China: A number of criminal prosecutions occurred, with two people being executed, another given a suspended death penalty, three others receiving life imprisonment, two receiving 15-year jail terms, and seven local government officials, as well as the Director of the Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) being fired or forced to resign.

The State Council ordered an overhaul of the dairy industry, and promised to provide free medical care to those affected and a top-level official apology went like this.

“This incident made me feel sad,None of those companies without professional ethics or social morals will be let off.



JUNE 21, 2012, 12:28 AM | 125 Comments

From Milk to Peas, a Chinese Food-Safety Mess

By MARK MCDONALD



Qilai Shen/European Pressphoto Agency

Another incident of tainted milk in China — this time with mercury — has led to a major recall.

NY Times



5. Do Harsh Punishments work?

Accounts of dubious or unsafe food in China are as mesmerizing as they are disturbing — “artificial green peas,” grilled kebabs made from cat meat, contaminated chives, chlorine showing up in soft drinks.

There have been stories of imitation soy sauce made from hair clippings, ink and paraffin being used to dress up cheap noodles, and pork buns so loaded with bacteria that they glow in the dark.

A new investigation by the Chinese magazine Caixin has found that **“these publicized food safety scandals represent only a fraction of unsafe food production practices. Hundreds of chemical food additives are pumped into products that Chinese people consume every day.”**

The official Chinese news agency Xinhua reported Wednesday that Chinese authorities have discovered 15,000 cases of substandard food so far this year while shutting down 5,700 unlicensed food businesses.

Things are so bad that a new iPhone app was recently launched to track food scandals nationwide. The app, which sends out daily updates on the latest outrages, was reportedly downloaded more than 200,000 times in the first week.

NY Times





- That knowledge of intrinsic product safety is essential to ensure food safety
- That economic and deliberate adulteration can be a food safety issue and can have a global effect
- That there are high direct and indirect costs
- And that we have not learned from past mistakes!



Cream
Nonfat Milk
Milk
Whey
Sugar
Corn Syrup
Guar Gum
Cellulose Gum
Carrageenan
Mono & Diglycerides
Polysorbate 80 Annatto
Extract
Enriched Flour
Bleached (Wheat Flour,
Niacin Reduced Iron,
Thiamin
Mononitrate, Riboflavin,
Folic Acid)
Plastic coated cup
Turmeric (Color)
Blueberry
Strawberry

Partially Hydrogenated
Soybean Oil
Leavening (Sodium
Bicarbonate
Sodium Aluminum
Phosphate
Aluminum Sulfate,
Monocalcium Phosphate)
Corn Syrup, Dextrose,
Food Starch-Modified,
Emulsifier (Soy Lecithin,
Propylene
Glycol Monoester, Mono-
Diglycerides)
Salt
Xanthan Gum,
Natural And Artificial
Flavors (Contains Milk
Derivatives),
Annatto (Color),
pecan



What Should we do?

There is a worldwide need to improve food safety programs – No single country is exempt

Companies all over the world have issues. Food safety failures occurs in large well know companies as well as smaller enterprises

All types of hazards – biological, chemical and physical are involved

What Should we do?

The various reasons for failure indicate the need for robust PRPs for assurance of

- Cross contamination prevention
- Improved supplier control
- Hygienic design of equipment
- Adequate cleaning and sanitation practices
- Preventive maintenance programs

Behaviour based Models

Traditional Food Safety Management	Behaviour based food safety management
Focuses on processes	Focuses on process and people
Simplistic view on behaviour change	Behaviour change is complex
Primarily based on food science	Based on food safety, behaviour science, organisational culture
Linear cause effect thinking	System thinking
Creates a food safety program	Creates a food safety culture

Safe food for all

Food Safety: An Essential Public Health Function

Health Related Services

Information Gathering

Advice, Training and
Education

Food Legislation and
Enforcement

Government

Labeling and consumer education

Training managers and food
handlers

Appropriate process and
technology

GHP and QA

Industry

Active consumer groups

Community participation

Selective and responsible

Good hygiene handling in
home

Consumers

Concept of shared responsibility

Academia: Science, research and development

Australia & New Zealand

FSANZ's Objectives

Protection of public health and safety

Provision of adequate information for consumers to make informed choices

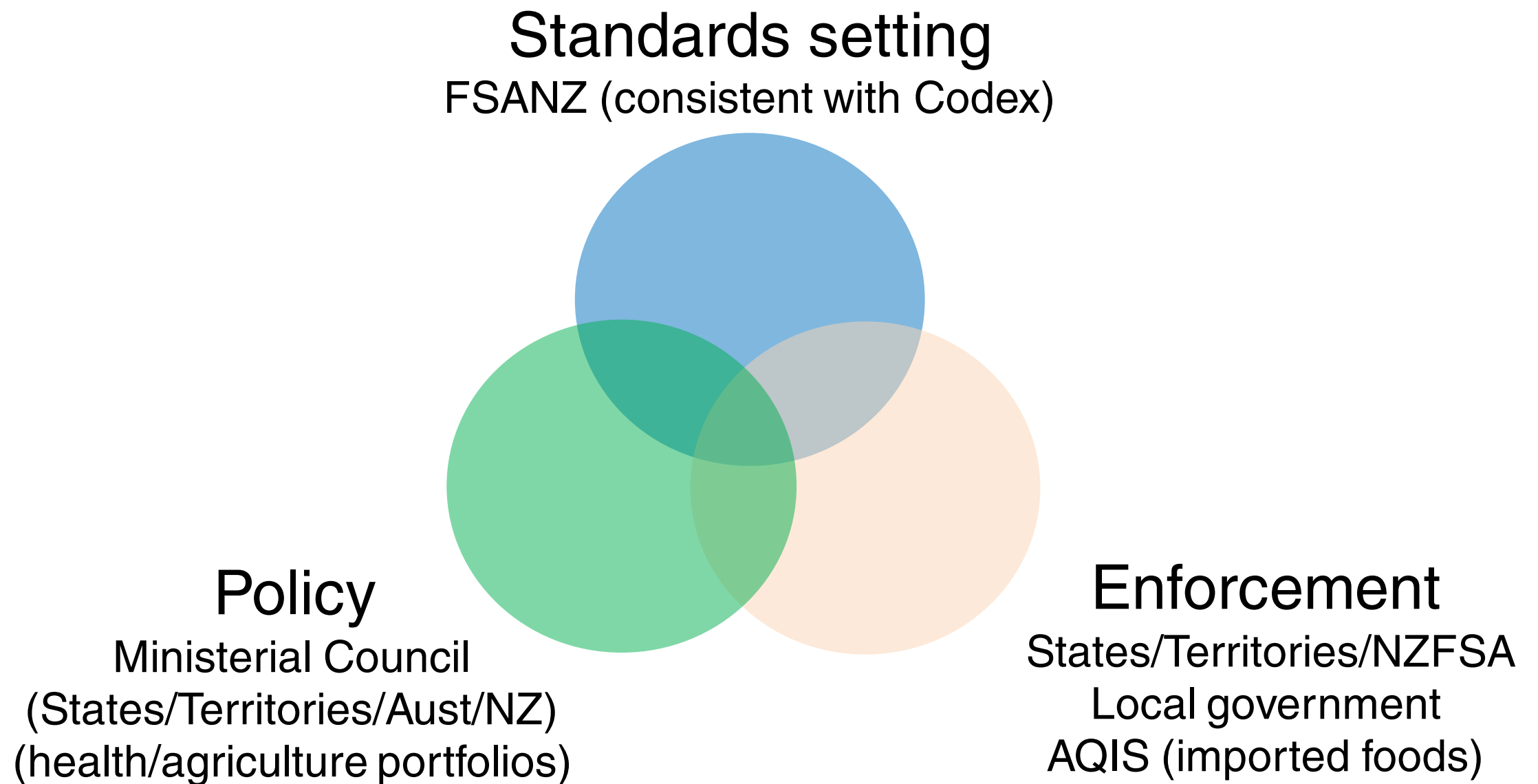
Prevention of misleading or deceptive conduct



Other Key Considerations:

- Risk analysis using the best available scientific evidence
- Consistency between domestic & international food standards
- Efficient and internationally competitive food industry
- Promotion of fair trading in food
- Written Ministerial policy guidelines

Food Regulation Framework- AUS/NZ





Developments in USA

Food Safety Modernisation Act- most extensive reform of the Food and Drug Administration's (FDA) food safety authority since 1938.

As FDA's Deputy Commissioner explained, the FSMA shifts the focus of FDA activities from "catching food safety problems after the fact to systematically building in prudent preventive measures across the food system, from the farm to the table."



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Key elements in the FSMA:

- **Requirements for food processors to analyze food safety hazards and implement risk-based preventive controls;**
- **Mandatory FDA recall authority with greater public outreach;**
- **Enhanced traceability systems for food products;**
- **Improved disease surveillance and use of science-based risk assessments to target FDA activities;**
- **On farm safety standards for produce; and**
- **Redesign of FDA's import safety control system by coupling third-party certification and private-sector verification with FDA inspection of foreign food facilities.**

Source: FDA



China

China released a five-year plan on Friday to upgrade its food safety regulations in June 2012

The government aims to improve national food safety standards by revamping outdated standards, reviewing and abolishing any contradicting or overlapping standards and working out new regulations.

Food Safety Developments in the Middle East

- Harmonization of GCC standard for imported food
- Federal food standards for UAE
- Microbiological standards are being reviewed – risk assessment component for testing
- Labeling and shelf life requirements are being reviewed

Dubai Programs

- Disease surveillance and investigation system
- New food Code
- Certified person in charge of food safety in every food business
- Registration of foods in Dubai and the FIRS
- (250000 products registered)
- Risk based sampling program has implemented
- ISO17020 for inspection system

FIRS (Food Import and Re-Export System

This system includes of the following components:

- Food Label approval online
- Food Item Registration
- Food Import Request and Follow up
- Health Certificate Issuance
- Distribution of Circulars

Food Classification and Description

Group

Dairy Products

Category

Imitation Dairy Products

Subcategory

non-dairy coffee creamer

Item
Description

Process 1

Make A Selection



Process 2

Make A Selection



Flavor 1

Make A Selection



Flavor 2

Make A Selection



non-dairy coffee creamer



Reset

Arabic
Description



Inspection Time

15

3. Communication using Modern Technology

Google Groups- Online Food safety Clinic

→ ↻ <https://groups.google.com/forum/?hl=en&fromgroups#!forum/foodsafetydubai> ☆

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Google

Bobby Krishna 1 + Share

Groups

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▼ Recently viewed OBA UAE Chapter Foodsafe Food Safety Dubai

► Recent searches

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Food Safety Dubai ★ 6 Showing 31 of 3302 topics (99+ unread) [New assigned](#)

There is [one pending message](#) and [one member](#) to review

This group does not have a welcome message. [Add welcome message](#)

<input type="checkbox"/>		★	Review of food code					Regulation	Requirements
			By me - 5 posts - 299 views - updated Aug 6 (2 days ago)						
<input type="checkbox"/>		★	Take-away request for the food from Buffet left-over: Should be entertained or not						
			By Piyush Verma - 13 posts - 16 views - updated 10:18 AM (11 hours ago)						+ 7 others
<input type="checkbox"/>		★	Post From The Past. Restaurant Inspections: Does Publishing The Results Do Any Good? (1)						
			By me - 1 post - 6 views - updated Aug 7 (1 day ago)						
<input type="checkbox"/>		★	Food poisoning investigation - when do we learn? (1)						
			By me - 1 post - 4 views - updated Aug 7 (1 day ago)						
<input type="checkbox"/>		★	Food samples (13)						+ 4 others
			By Ajeethan - 13 posts - 38 views - updated Aug 7 (1 day ago)						
<input type="checkbox"/>		★	Aluminium foil linked to osteoporosis and Alzheimer's (1)						
			By sakariya vu - 1 post - 4 views - updated Aug 7 (1 day ago)						
<input type="checkbox"/>		★	Food poisoning affects over 400, two children dead (1)						
			By Azeez - 1 post - 3 views - updated Aug 7 (1 day ago)						
<input type="checkbox"/>		★	Food Safety Dubai group (1)						
			By jabiozr - 1 post - 1 view - updated Aug 7 (1 day ago)						
<input type="checkbox"/>		★	Respiratory distress- a key in food poisoning case? (2)						

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Think Global...

- ✓ That we can always do better
- ✓ That we can learn from others experience and should be open to doing so
- ✓ That people matter- enormously
- ✓ That we cannot take short cuts
- ✓ That we need to know the products well

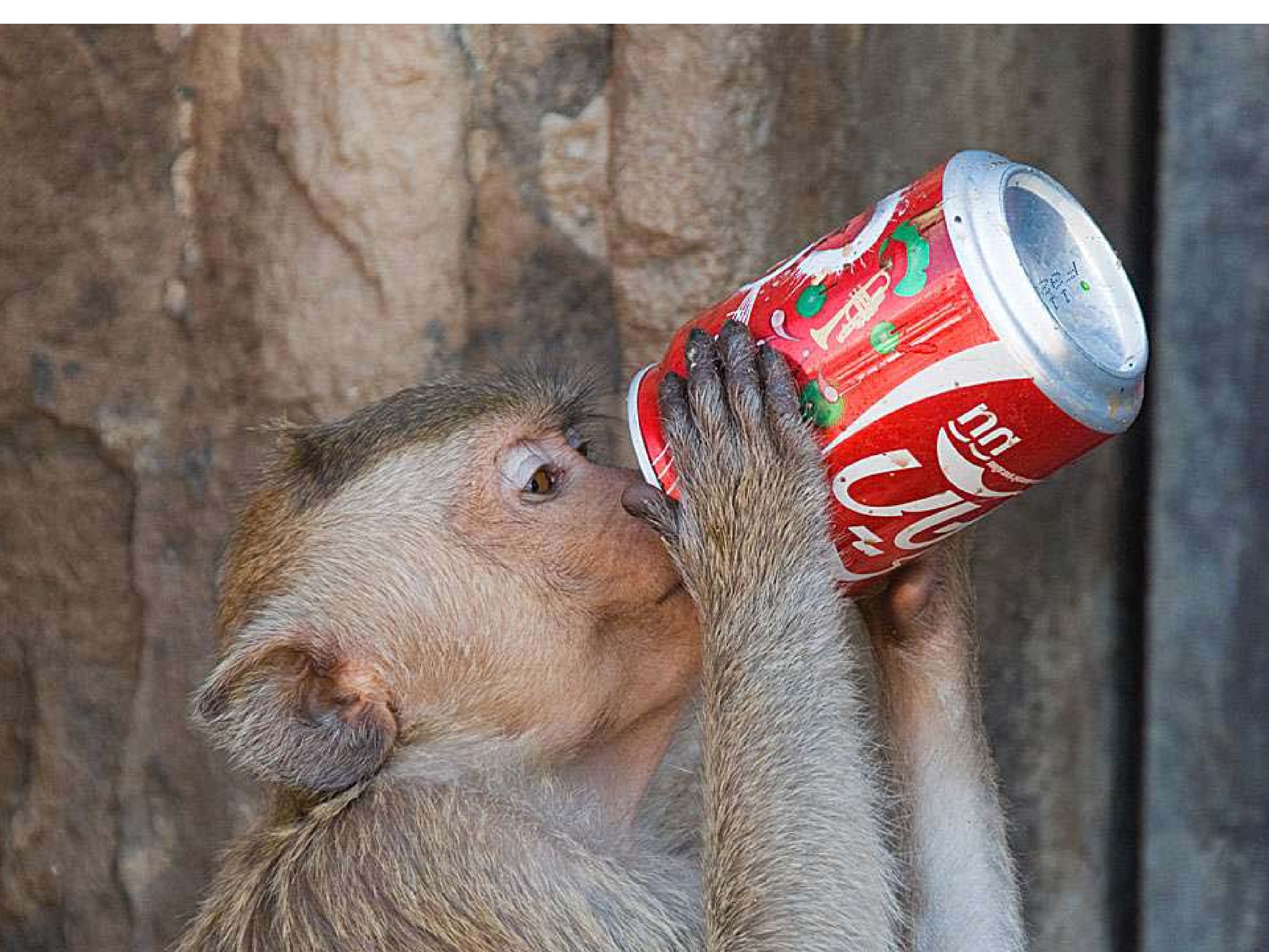
Think Global...

- ✓ That we cannot rely on others to fix our problems
- ✓ That many misconceptions still remain
- ✓ That many food safety incidents were preventable
- ✓ That there are real benefits











Collaboration

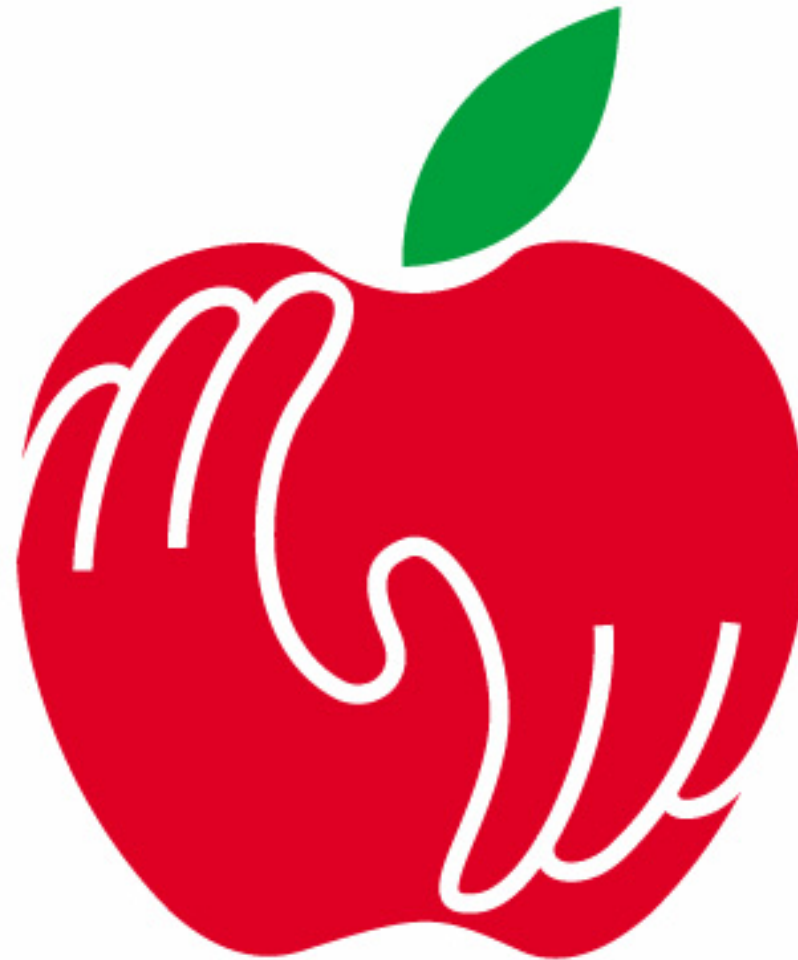
Culture

Commitment

Competency

Communication

Compliance



FOOD SAFETY
A RESPONSIBILITY TO SHARE

No Corruption