



**Food and Agriculture Organization
of the United Nations**

Emerging risks in a changing world

Dr. Hilde Kruse, FAO

Summer School "Emerging Risks for Food Safety and Public Perception", Parma, 15 May 2018

*FAO's goal is to achieve **food security** for all and make sure people have regular access to enough high-quality food to lead active, healthy lives.*

FAO, 2018

“Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”

World Food Summit, 1996

*“There can be no food security without **food safety**”*

FAO Director-General
José Graziano da Silva

Food safety: Assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use

The Codex General Principles of Food Hygiene



SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS

SUSTAINABLE DEVELOPMENT GOALS

Importance of food safety in achieving the SDGs





SDG 1: End poverty in all its forms everywhere



- SDG 1.1: By 2030, eradicate **extreme poverty** for all people everywhere
- SDG 1.2: By 2030, reduce at least by **half the proportion** of men, women and children of all ages living in **poverty**



SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture



- SDG 2.1: By 2030, end hunger and ensure **access by all people**, in particular the poor and people in vulnerable situations, including infants, to **safe**, nutritious and sufficient food all year round



SDG 3: Ensure healthy lives and promote well-being for all at all ages



- SDG 3.2: By 2030, end preventable deaths of newborns and children **<5 years** of age
- SDG 3.3: By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, **waterborne diseases and other communicable diseases**
- SDG 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous **chemicals**



SDG 6: Ensure access to water and sanitation for all



- SDG 6.1: By 2030, achieve universal and equitable access to **safe and affordable** drinking water for all
- SDG 6.2: By 2030, achieve access to adequate and equitable **sanitation and hygiene** for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations



SDG 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation



SDG 12: Ensure sustainable consumption and production patterns



- SDG 12.2: By 2030, achieve the sustainable management and efficient use of **natural resources**
- SDG 12.3: By 2030, **halve** per capita global **food waste** at the retail and consumer levels and **reduce food losses** along production and supply chains, including post-harvest losses
- SDG 12.4: By 2020, achieve the environmentally sound management of **chemicals** and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly **reduce their release to air, water and soil** in order to minimize their adverse impacts on human health and the environment
- SDG 12.5: By 2030, substantially **reduce waste generation through prevention, reduction, recycling and reuse**

SDG 14: Conserve and sustainably use the oceans, seas and marine resources



- SDG 14.1: By 2025, prevent and significantly **reduce marine pollution** of all kinds, in particular from land-based activities, including marine debris and nutrient pollution

Thai scientist assures quality and safety



of Thai rice

A Thai researcher at the Chulabhorn consumers that arsenic concentration in Thai and poses no threat to consumers' health.

Contaminated strawberries from China infect over 11,000 children in Germany



E.coli threat prompts sprouted seeds measures

EU Member States have endorsed strict hygiene measures for ready-to-eat sprouted seeds to prevent incidents such as the deadly E.coli O104 outbreak in Germany and France last year.

Trace Fukushima radiation found in Northwest albacore tuna

Researchers have found tiny amounts of radioactive cesium in albacore caught off Washington and Oregon. The radiation, originating from the 2011 tsunami in Japan, is thought to pose no public-health risk, but it is allowing scientists to track the migratory patterns of tuna for

After Salmonella Outbreaks, FDA Names Mango a "High Risk" Fruit



This past summer's Salmonella outbreak linked to mangoes and subsequent investigation have ended, but not before the U.S. Food and Drug Administration (FDA) declared the fruit to be "high risk," promising increased inspections at U.S. ports of

Death toll in Czech methanol poisonings climbs to 30: report

PRAGUE — The death toll in a wave of poisoning from methanol-tainted alcohol in the Czech Republic rose to 30 on Friday as a 66-year-old man fell victim to lethal bootleg liquor, the CTK news agency reported.

CFIA Inspectors find issues with cleanliness, sanitation at XL Foods plant

Ukraine, Russia to cooperate on meat and dairy products supplies

Eleven civic schoolchildren fall sick after drinking flavoured milk

Eleven children suffered food poisoning after drinking flavoured milk at MHB Urdu municipal school in Malvani, Malad, on Thursday. Following this, the civic body decided to stop supply of flavoured milk to

Undeclared Peanuts Prompts Allergy Alert and Recall

A recall has been issued by Grand BK of their 7 oz. plastic container units of Black & Mix Crisp and Crisp Mix because the products may contain peanuts. Those with a peanut allergy or a severe sensitivity to peanuts are at risk of a serious or life threatening allergic reaction upon consumption.

DATCP Issues Warning About Aflatoxin in Corn Shipments

Although Wisconsin may export more corn products than it brings in this year, state agriculture officials are advising producers to be aware of aflatoxin in any feed they bring on to their farms. Aflatoxin is a byproduct of so that's associate

KROGER GROCERY CHAIN TO STOP SELLING A PRODUCE PRODUCT DUE TO HEALTH RISKS

(NATIONAL) -- The Cincinnati-based grocery chain Kroger has announced it will stop selling sprouts due to the potential food safety risk of to a Kroger news release on Friday.



UK charity urges government to ban BPA in food and drinks packaging

A UK charity has launched a petition urging the country's government to 'take the lead' and ban bisphenol A (BPA) and endocrine disrupting chemicals in food and drink packaging.

Acrylamide may cause low birth weight: New research

New research has linked foods rich in acrylamide, such as chips, to a higher risk of low birth weight children, while levels of the chemical in chips are rising, according to a separate report the European food watchdog the European Food Safety Authority (EFSA).

Food safety during pregnancy

LONDON: Women are more susceptible during pregnancy to food borne illness, which also can harm the unborn baby, the Academy of Nutrition and Dietetics says.

Sun-Dried Tomatoes Linked To Outbreak Of Hepatitis A



68 per cent milk in India non-conforming to food safety standard: Government

New Delhi: Over 68 per cent of milk in the country does not conform to the standards set by the Food Safety and Standards Authority of India (FSSAI), the Centre has told the Supreme Court on a plea for checking sale of synthetic and adulterated milk and various dairy products. The submission has been made by the Centre in its affidavit which referred to a survey conducted by the FSSAI, which had found that over 68 per cent of the "non-conforming" milk was found in urban areas, 66 per cent of which was loose milk.



Lead Contamination Prompts Recall Of "Toxic Waste" Candy

An Indianapolis candy company issued a formal recall for its 'Nuclear Sludge' Chew Bars after it was found that they contain elevated levels of lead.



After Hurricane Sandy, many confront food-safety issues
UNIVERSITY PARK, Pa. -- After Hurricane Sandy ravaged the Northeast, people and businesses face the daunting task of recovery. One of the biggest questions they confront is what to do with food, according to a food safety expert in Penn State's College of Agricultural Sciences.

From Milk to Peas, a Chinese Food-Safety Mess



HONG KONG — There's mercury in the baby formula. Cabbages are sprayed with formaldehyde. Gelatin capsules for pills, tens of millions of them, are laced with chromium. Used cooking oil is scooped out of gutters for recycling, right along with the sewage.

Buying Food Past Its Sell-By Date Tough To Swallow For Greeks

Austerity measures continue in Greece as the country sinks into recession. Incomes have dropped nearly 50 percent in some areas and prices are at record highs. The Greek newspaper Ekathimerini reported that the country has some of the most expensive and costliest dairy products in the entire European Union.

Inspections Of Foreign Meat Decline After Budget Cuts To Food Safety Programs

The number of countries that the United States Department of Agriculture (USDA) has visited for in-person inspections has plummeted over the last four years, as budget cuts have forced the agency to implement new inspection methods and rely on self-reporting by other nations. The number of countries the U.S. inspects in-person each year dropped to just three in 2011, and the average over the last four years has shrunk by 60 percent, Food Safety News reports:



Foodborne disease – a serious public health challenge throughout the world



WHO ESTIMATES OF
THE GLOBAL BURDEN
OF FOODBORNE DISEASES

The burden of **foodborne diseases** is substantial

Every year foodborne diseases cause:

almost
in 10
people to fall ill

33 million
healthy life years lost

Foodborne diseases can be deadly, especially in children <5

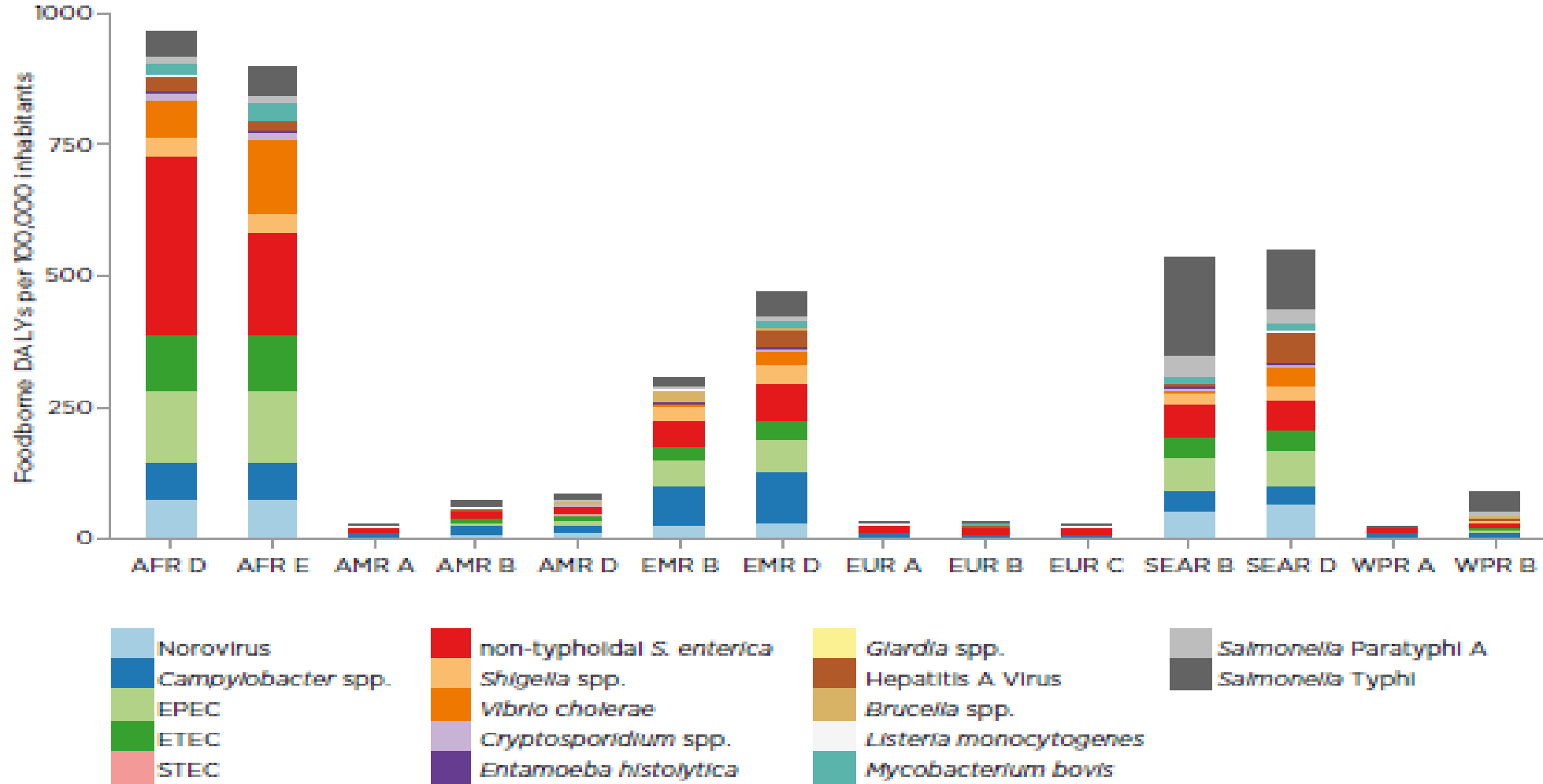

420 000
deaths



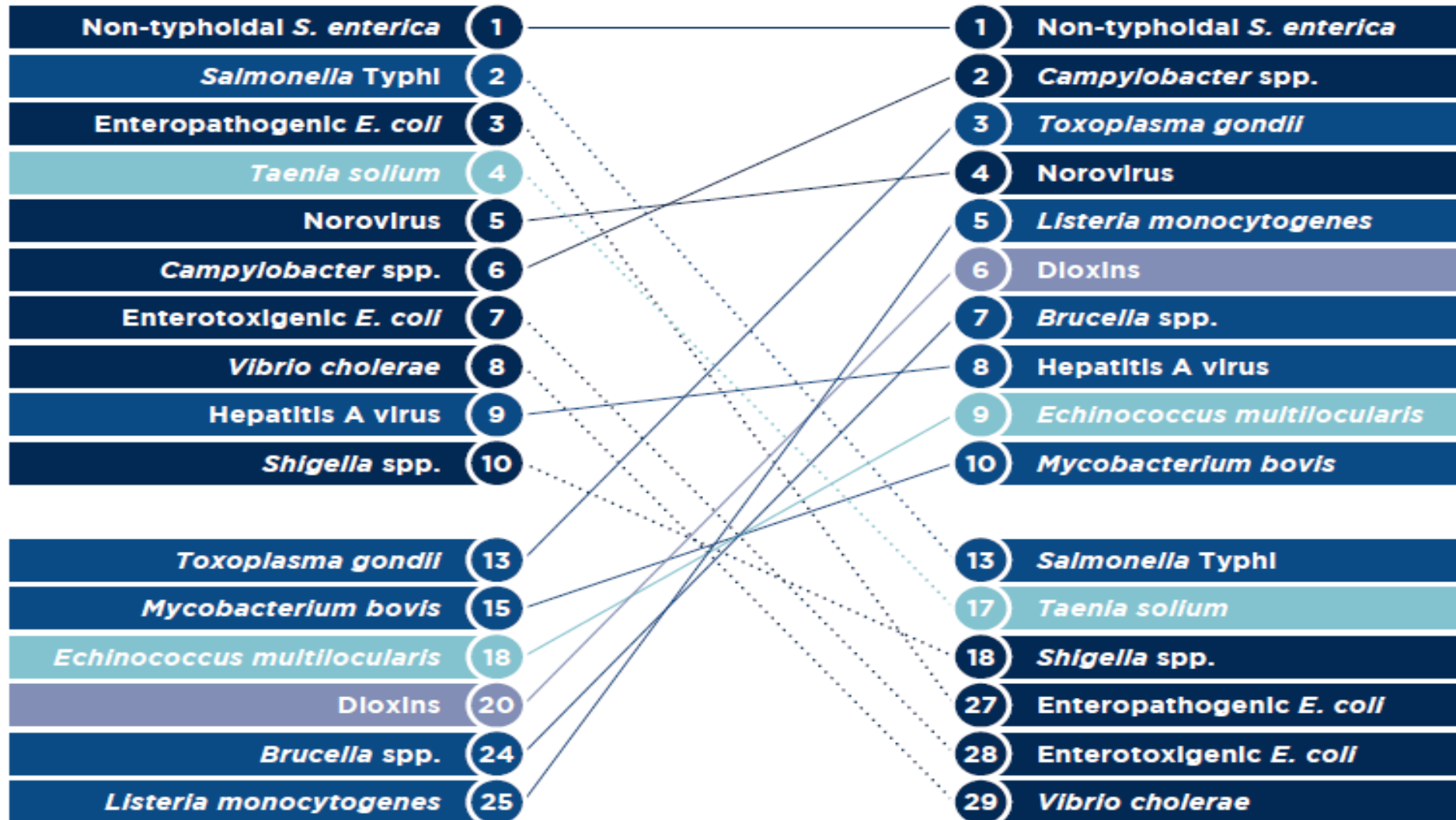
Children account for
almost **1/3**
of deaths from
foodborne diseases

**FOODBORNE DISEASES ARE PREVENTABLE.
EVERYONE HAS A ROLE TO PLAY.**

Regional difference in enteric foodborne disease burden

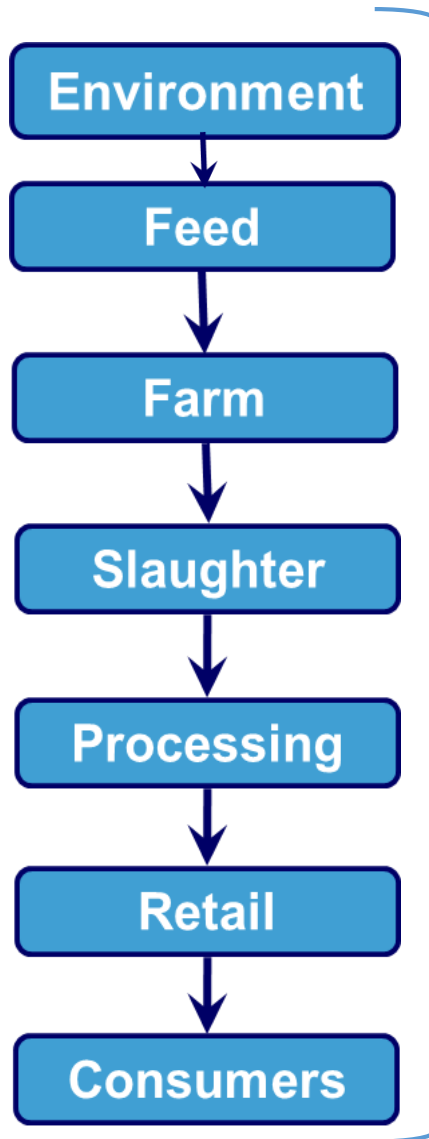


Causes of foodborne disease burden globally vs Europe

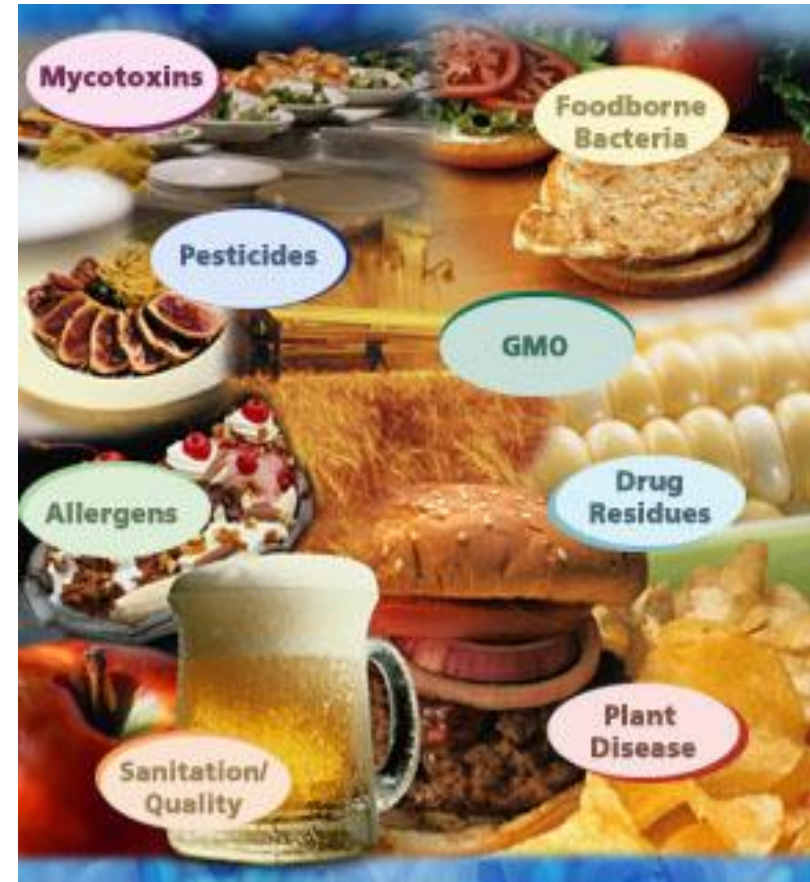


FERG, WHO, 2015

A long and increasingly complex food chain

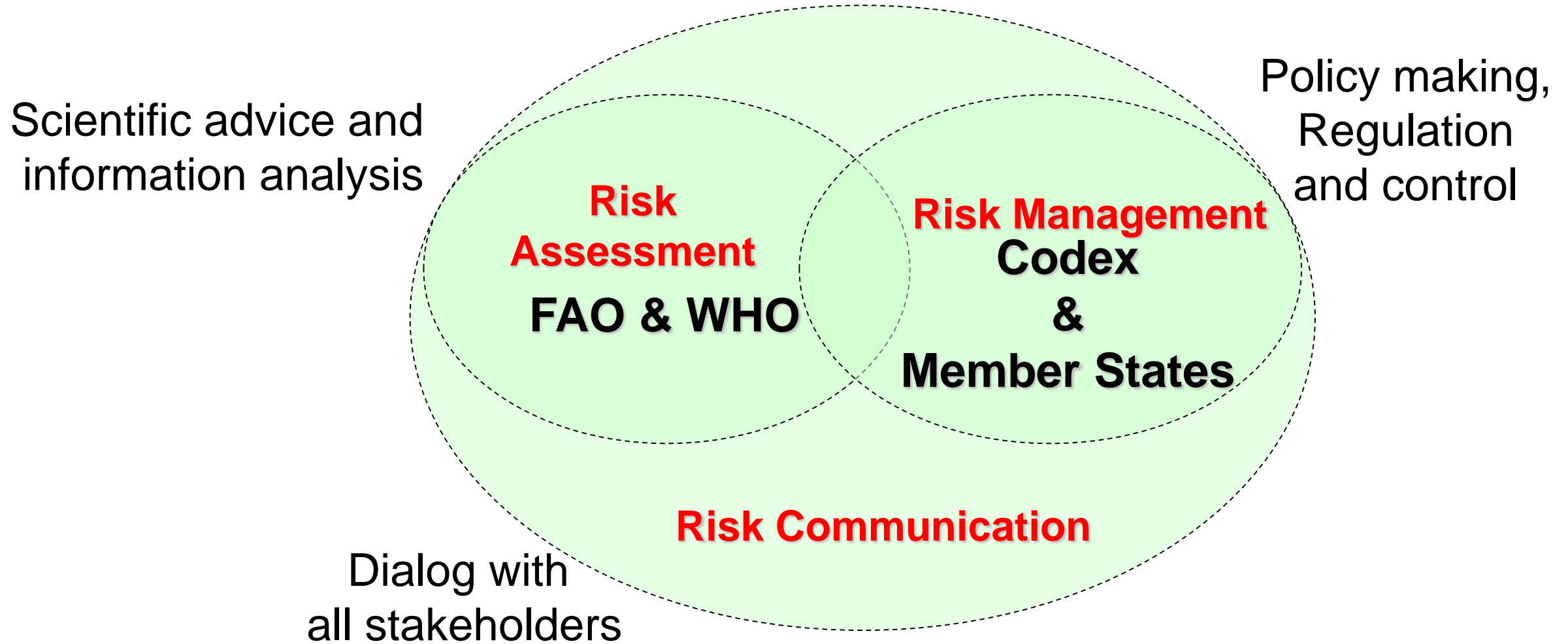


- Micro-organisms
- Parasites
- Chemicals
 - Contaminants
 - Additives
 - Residues
- Radioactivity
- Allergens



Approach: Multisectoral, interdisciplinary, One Health, whole-food-chain

Risk Analysis Paradigm at the international level



Hazards, risks and “issues”

Hazard: A biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect. (*Codex Alimentarius*)

Risk: A function of the probability of an adverse health effect and the severity of that effect, consequential to a hazard(s) on food. (*Codex Alimentarius*)

Emerging risk: “...risk resulting from a newly identified hazard to which a significant exposure may occur or from an unexpected new or increased significant exposure and/or susceptibility to a known hazard.” (EFSA)

Critical issues: Those that are the most pressing ones, and as such need to be addressed and considered as priorities. They can be known issues that are actually present/already occurring or even recurring. They can also be completely new. (*Codex Alimentarius*)

Emerging issues: Those that are new or unexpected. Although their effect is currently not necessarily being experienced, these issues may cause a change in the status quo. Identification of these issues will help to provide proactive guidance and support to countries in addressing prospective issues that could be of regulatory significance. (*Codex Alimentarius*)

Drivers of change

- A driver refers to the underlying cause of change that might lead to the presence or potential occurrence of a food safety issue
 - A driver of change could lead to hazards as well as opportunities in food safety and quality

Codex Alimentarius

- Examples:

- Technology development
- Trade
- Intensification of food production
- Consumer behaviors
- Climate change
- Evolving biology

Global Trends

Globalized trade,
travel and migration

Increasing human
population and demand
for food products

Increasing
vulnerability
of humans

Changes in
agriculture and
food industry

Changing
human lifestyles

Increasing
consumer
awareness
and demands

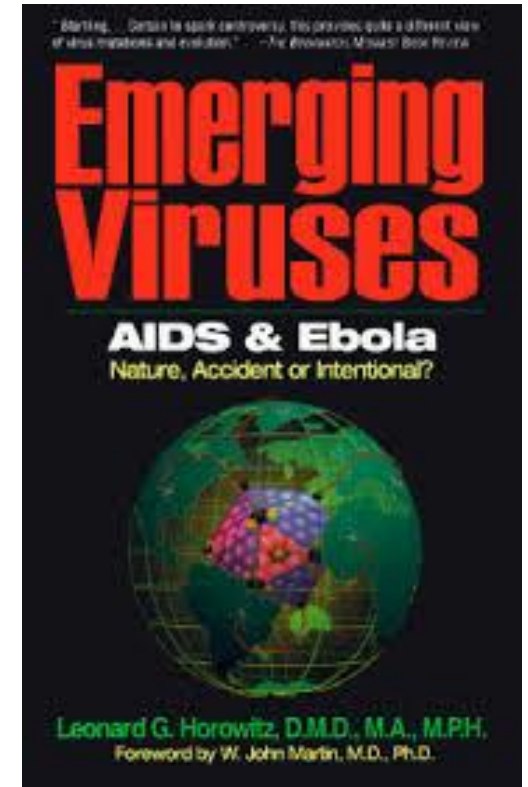
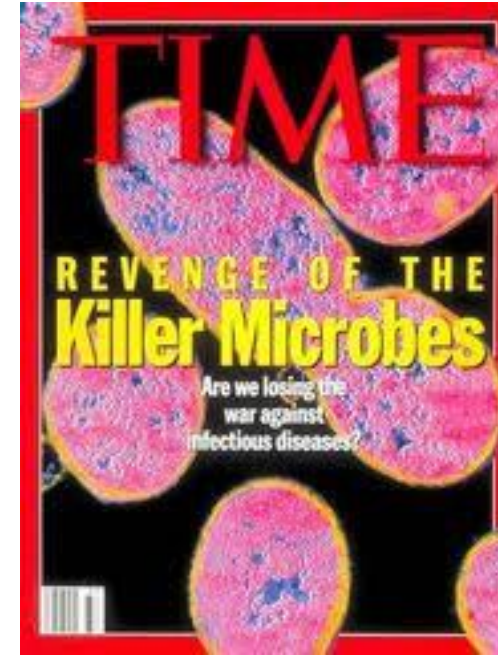
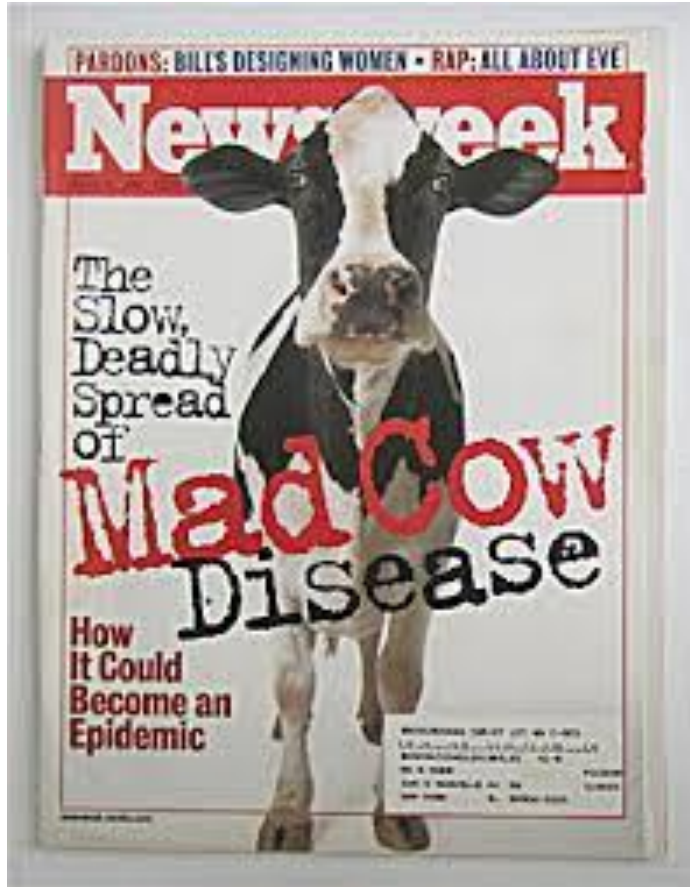
Biological
changes incl
emerging
pathogens and
AMR

Climate change
and changing
environments



Food safety challenges increasing!

Examples of past and current emerging food safety/health issues



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24 January 2013 Last updated at 13:18

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Antibiotic 'apocalypse' warning

By James Gallagher
Health and science reporter, BBC News

The rise in drug resistant infections is comparable to the threat of global warming, according to the chief medical officer for England.

Prof Dame Sally Davies said bacteria were becoming resistant to current drugs and there were few antibiotics to replace them.

She told a committee of MPs that going for a routine operation could become deadly due to the threat of infection.

Experts said it was a global problem and needed much more attention.

Antibiotics have been one of the greatest success stories in medicine. However, bacteria are rapidly adapting for which first new ways to

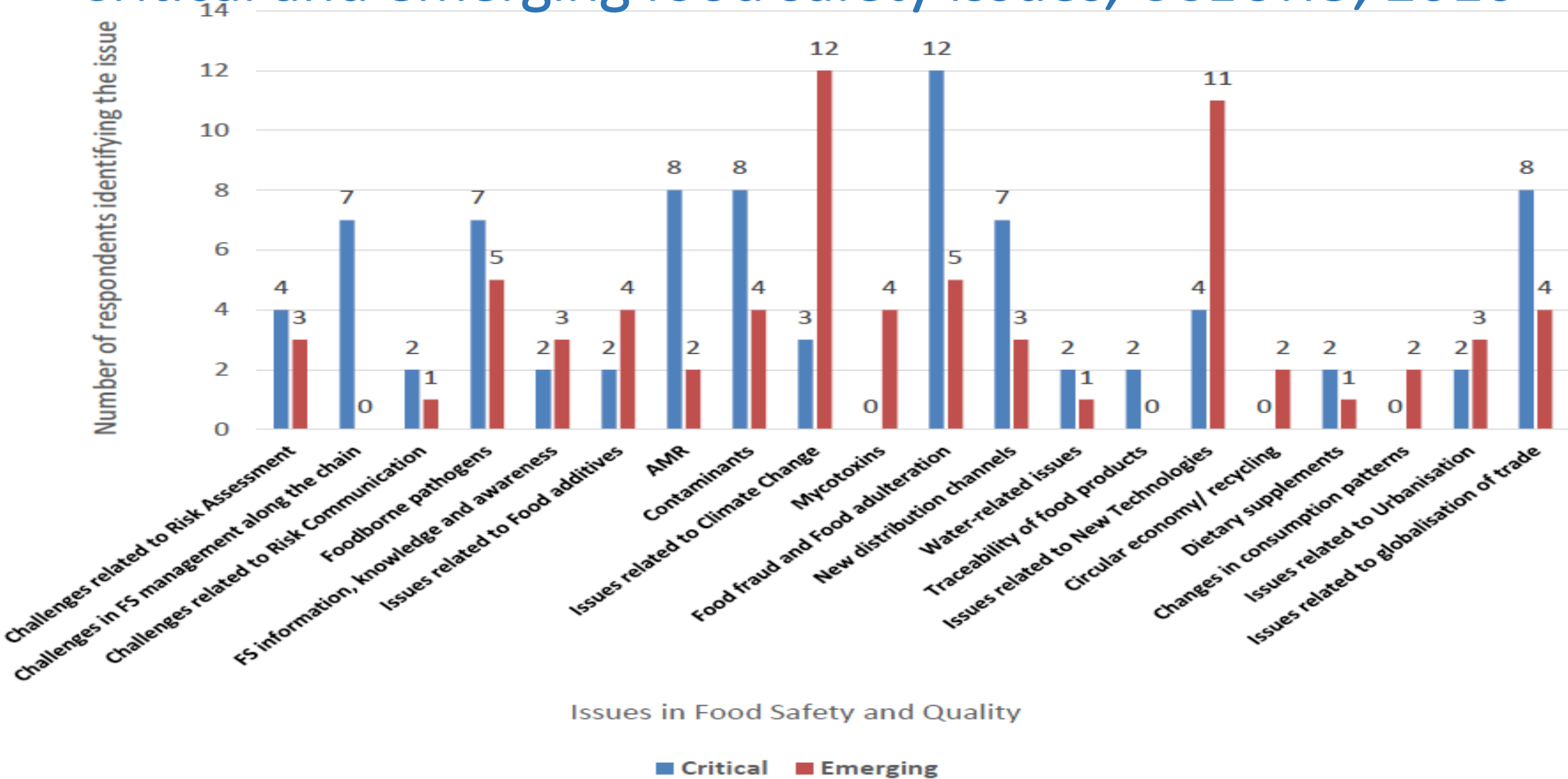


Drug resistance is a problem in tuberculosis

Related Stories

Warning on antibiotic resistance

Critical and emerging food safety issues, CCEURO, 2016



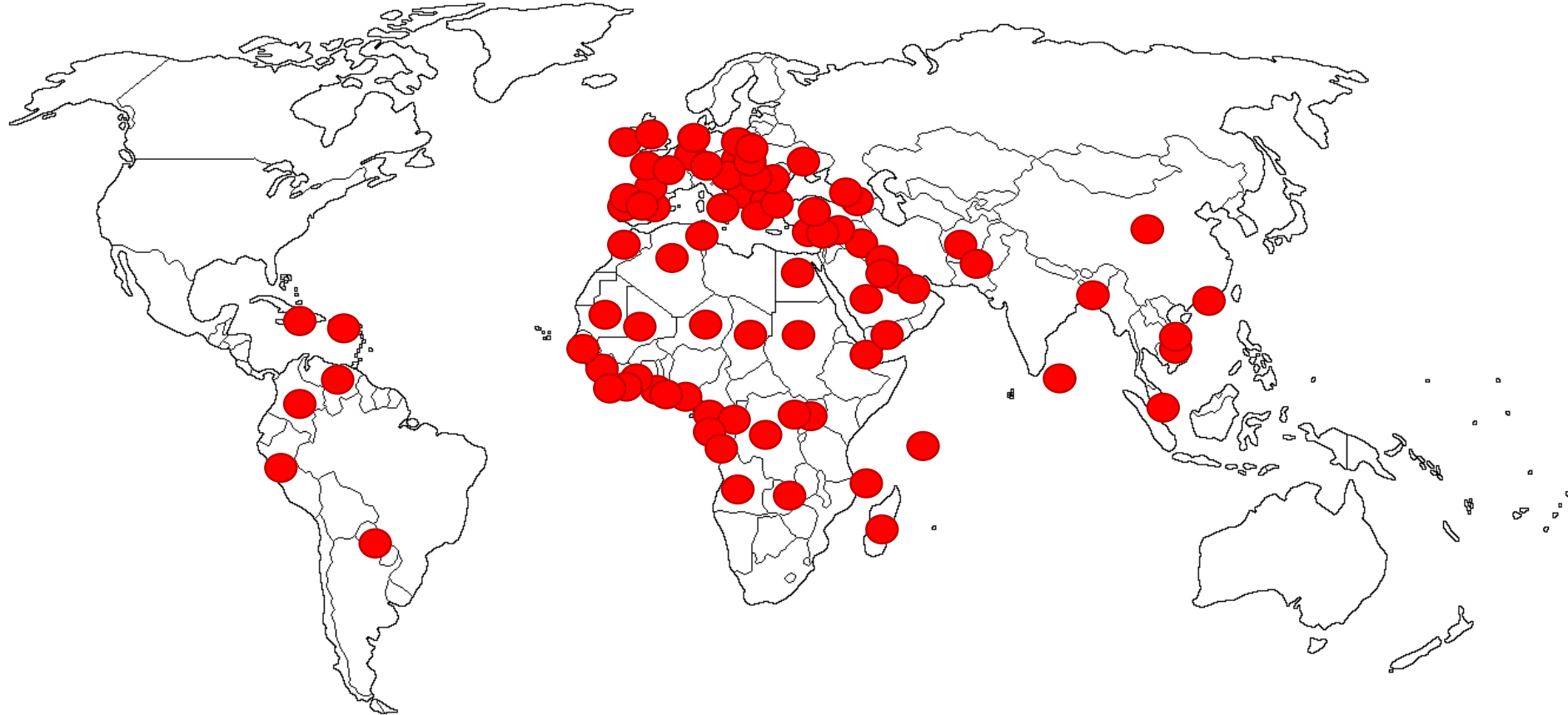
Examples of recent international food safety events



The International Food Safety Authorities Network (INFOSAN)

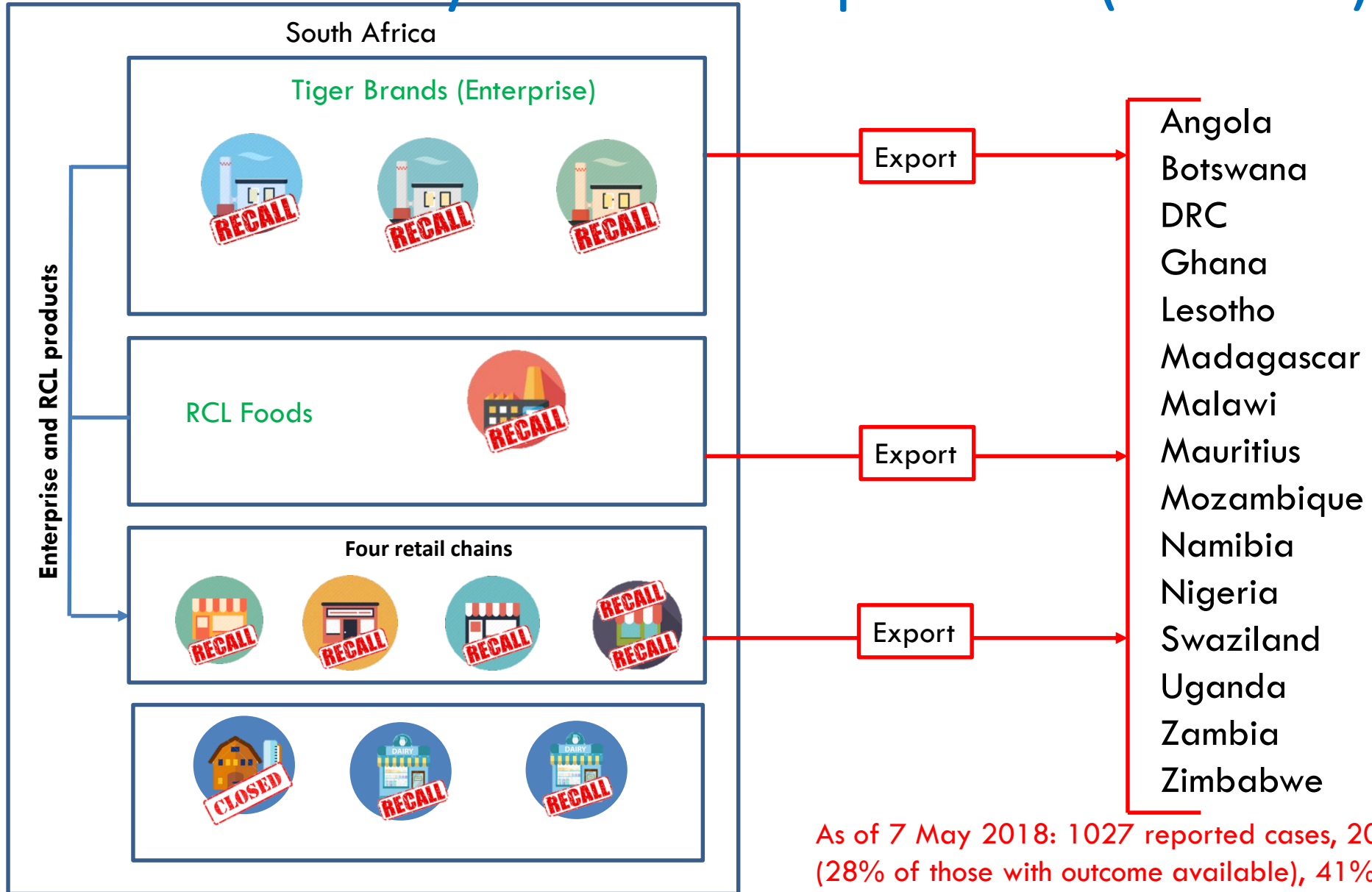
- Voluntary **Global network** of food safety professionals from around the world (~188 member states)
- Jointly managed by FAO and WHO
- Aims to strengthen prevention, preparedness and response to food safety events and emergencies by:
 - promoting the rapid exchange of information during food safety events
 - sharing information on important food safety issues of global interest
 - promoting partnership and collaboration between countries
 - helping countries strengthen their capacity to manage food safety risks

Outbreak of *Salmonella* Agona infections linked to internationally distributed infant formula (2017)



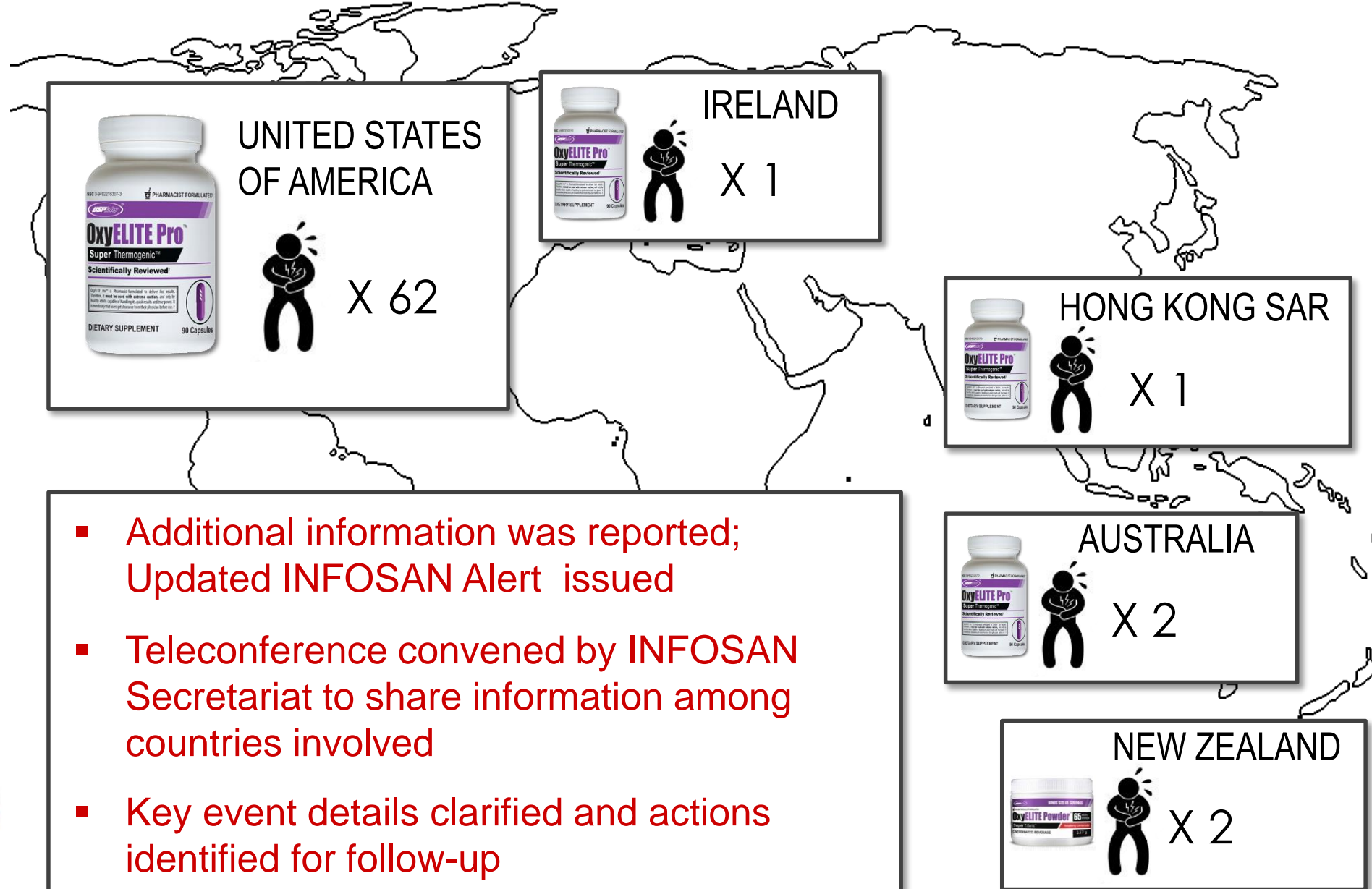
● Distribution of infant formula from France

Outbreak of listeriosis in South Africa linked to internationally distributed ready-to-eat meat products (2017-18)



As of 7 May 2018: 1027 reported cases, 201 deaths (28% of those with outcome available), 41% neonates

Outbreak of non-viral hepatitis linked to food supplements (2013)



- Additional information was reported; Updated INFOSAN Alert issued
- Teleconference convened by INFOSAN Secretariat to share information among countries involved
- Key event details clarified and actions identified for follow-up



Acute methanol poisoning in Czech Republic and Neighbouring Countries (2012)

- **From September-October 2012, over 30 deaths and a number of hospitalizations due to methanol poisoning occurred in the Czech Republic, Poland and the Slovak Republic**
- **These were linked to alcohol distributed from the Czech Republic**
- **Methanol was present in alcohol being sold in draught form and also in bottled alcoholic beverages**
- **The INFOSAN Secretariat facilitated the cross-border sharing of information and issued a Global INFOSAN Alert**



Outbreaks of salmonellosis in Canada and USA linked to chia seed products distributed internationally and sold online (2014)

Argentina

- Origin of Chia seeds



Export to Canada

Canada (63 Cases of Salmonellosis)

- Further processing of seeds into powder
- Sold at retail stores and online
- Several product recalls



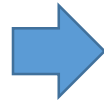
Export to USA

USA (31 Cases of Salmonellosis)

- Sold at retail stores and also online
- Several product recalls



Recalled product exported to **4** additional countries

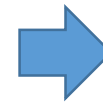


Recalled product exported to **14** countries

INFOSAN ALERT



EIS POSTING



Discussion via
INFOSAN Community
Website



What is foresight ?

A systematic, participatory and multidisciplinary approach to exploring mid- to long-term futures and drivers of change and disruptions

Explore the
future

- Unveil new paths, options, effects and implications
- Inform future research, policy-making and decision-making

“an approach and a process which requires broad thinking and results in the generation of multiple scenarios and ideas. Some of these ideas must then be further developed and implemented into policy and subsequent action”.

Why Foresight in Food Safety?

- **Anticipate and ensure early identification of emerging and important food safety issues**
 - Surveillance related issues
 - Production related issues
 - Socio-economic related issues
 - Environmental related issues
- **Inform policy-making, strategic planning and decision-making**
 - Development and implementation of effective preventative and/or corrective actions
- **Inform risk analysis and Codex work**
- **Inform future research**
- **Help to engage various stakeholders together**
 - Promotes a prevention-oriented and pro-active policy approach

Behaviors and answers when facing change

Behavior	Meaning	Action	Strategy
Passive	Accept	Let be	Submit
Reactive	Adapt	Adjust	Wait
Pre-active	Predict	Project	Get ready
Pro-active	Anticipate	Explore	Influence

Horizon Scanning

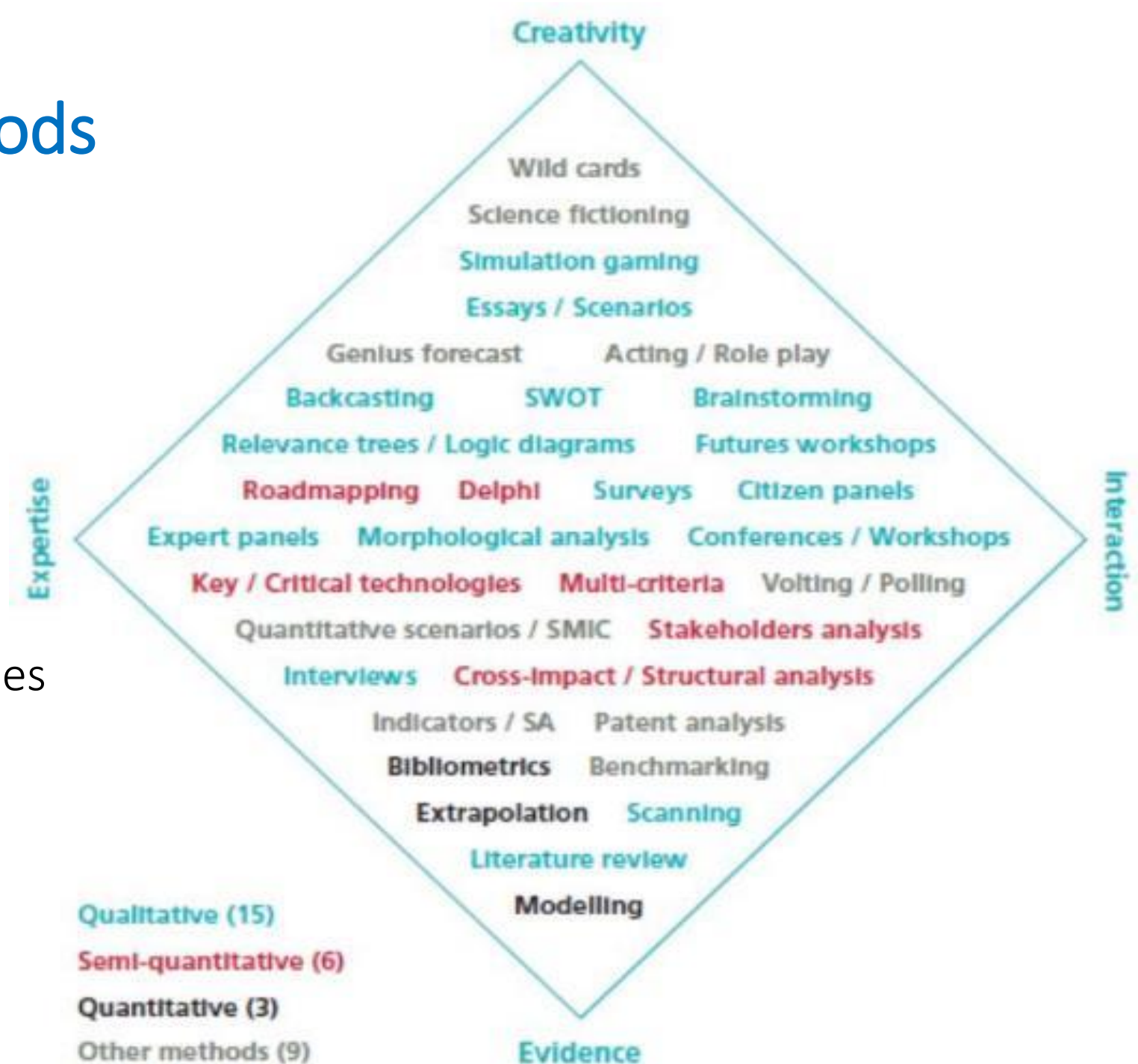
“a specific foresight method and is referring to methodological approaches that scan or review various data sources in order to identify issues that may have impact in the medium to long term future, while foresight refers to the wider group of more participatory methods”.



Foresight methods

Methods

- Qualitative to Quantitative
- Context dependent
- No single/best approach
- Fits objective and resources
- Allows participatory approaches



Take-home messages

- Ever more complex food chains and food systems
- A myriad of current and emerging food safety issues
 - “Expect the unexpected”
- Need for forward-looking and flexible food policies and food control systems
- Need for the application of foresight and futures thinking
- Need for intersectoral, interdisciplinary and international collaboration to identify emerging issues and events and to address them effectively
- Need for research and innovative approaches to prepare for the future



Thank you

www.fao.org/food/food-safety-quality