



Safe food supply and Consumption in Africa: Way forward

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Food safety burden

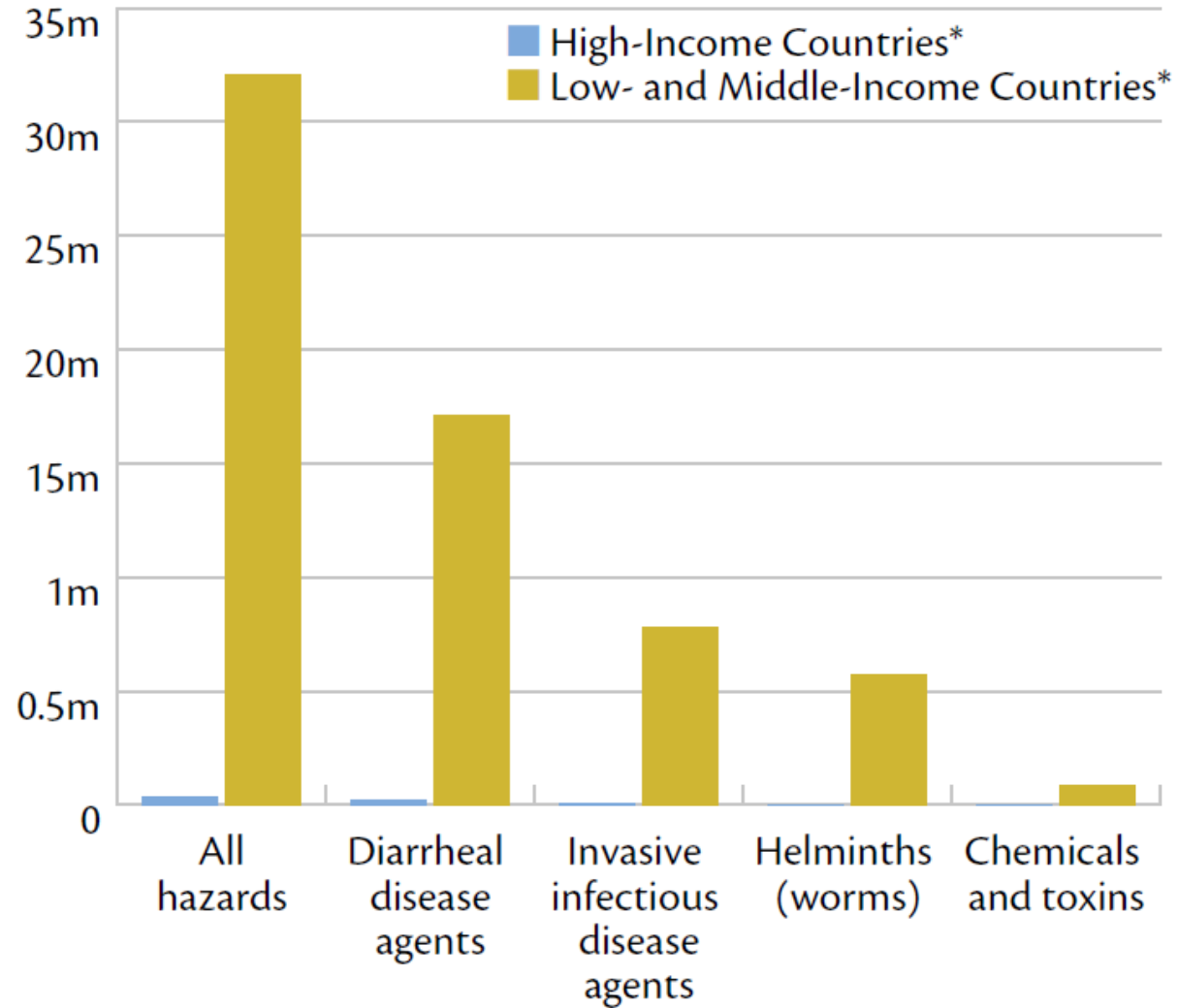
Every year, an estimated:

- **1 in 10 people** fall ill after eating contaminated food,
- **420,000** die, resulting in the loss of **33 million 'healthy life years'**

Children under 5 years are most affected;

accounting for almost **33% of all food contamination deaths**, although they represent only 9% of the world's population.

Global burden of foodborne disease (DALYs)



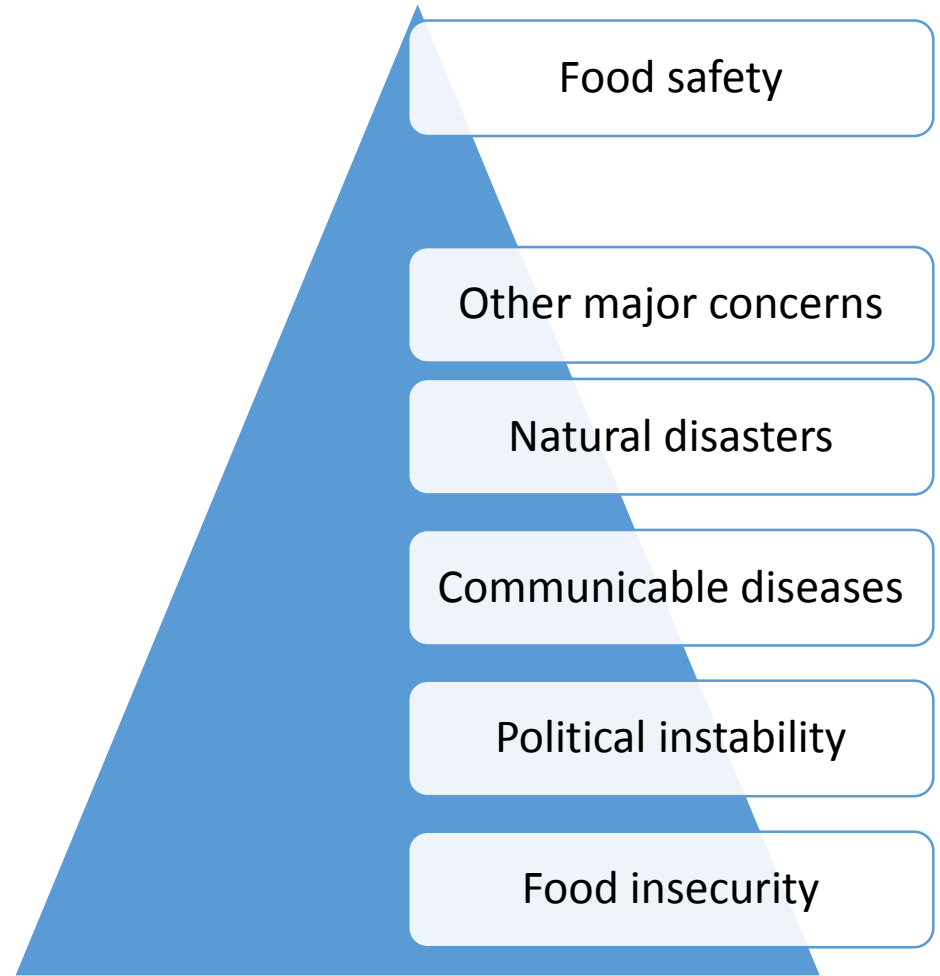
Why food safety matters

Unsafe food can:

- affect nutrition **directly** resulting in impaired growth and development
- **indirectly**, affecting the availability of and people's access to safe, nutritious food



Importance of food safety in Africa



Dominant government and media agendas

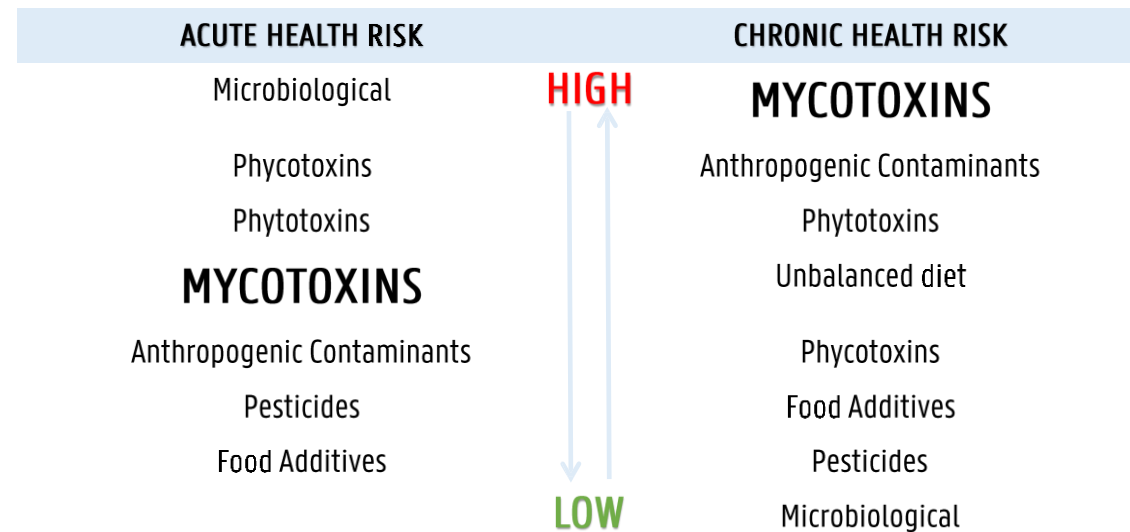
The importance of food safety is often not well understood. However, food safety is of critical importance to Africa because of its aggravating impact over the above listed concerns.

- The 1996 World Food Summit Plan of Action recognized the importance of food safety, as it defined food security as: “...when all people ... (have) access to sufficient, safe and nutritious food ...”.

FOOD SECURITY vs FOOD SAFETY

'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 Summit, 1996)

FOOD SAFETY AS PART OF FOOD SECURITY



Food-borne diseases are a serious threat to people in Africa, causing an unbearable public health burden and massive economic losses.

WHO estimates that some 700 000 deaths per year in Africa are due to food and water-borne diseases.



Food safety and foodborne illness



These are caused by a variety of disease causing agents such as bacteria, parasites, viruses, toxins and chemical residues.

Foodborne diseases are a widespread and growing public health problem, both in developed and developing countries.



Naturally occurring toxins, such as mycotoxins, marine biotoxins, cyanogenic glycosides and toxins occurring in poisonous mushrooms, periodically cause severe intoxications.

Persistent Organic Pollutants (POPs) are compounds that accumulate in the environment and the human body. Known examples are Dioxins and PCBs (polychlorinated biphenyls). Exposure to POPs may result in a wide variety of adverse effects in humans.



Metals: such as lead and mercury, cause neurological damage in infants and children. Exposure to cadmium can also cause kidney damage, usually seen in the elderly. These (and POPs) may contaminate food through pollution of air, water and soil.

Salmonellosis is a major problem in most countries. Salmonellosis is caused by the *Salmonella* bacteria and symptoms are fever, headache, nausea, vomiting, abdominal pain and diarrhoea.

Examples of foods involved in outbreaks of salmonellosis are **eggs, poultry and other meats, raw milk and chocolate.**

Food safety threats in Africa



Food safety is a threat to:

- Public health
- Agriculture
- Food systems



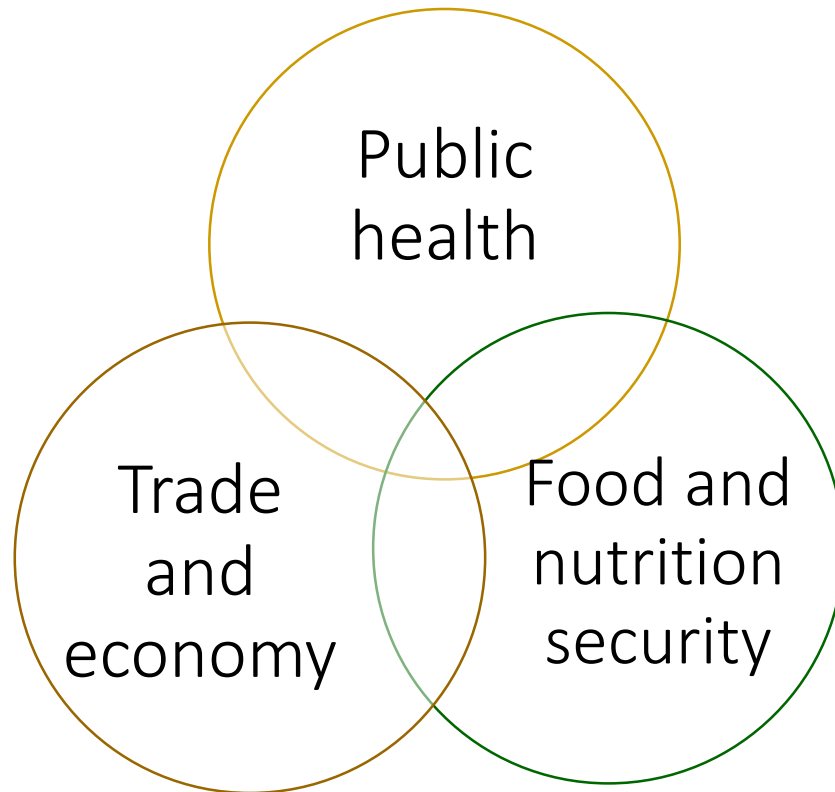
It affects:

- Trade
- Rural incomes & purchasing power
- Worker productivity
- Consumer confidence

- Incidence of diarrheal diseases in African children, estimated as 3.3 to 4.1 episodes per child per year.
- It is estimated that 800,000 children in Africa die each year from diarrhea and dehydration, disability, and even early death, thus lowering incomes and access to food.



Impact of aflatoxins



30% of liver cancer cases in Africa

Affect up to **25%** of the world's food crops

Africa loses up to US\$ **670** million annually

Aflatoxin are toxic and carcinogenic byproducts of fungi that colonize maize, groundnuts and other crops

In 2004, 123 deaths were reported in Kenya due to **Aflatoxin acute intoxication**

Process of finding a sustainable solution to fungal contamination and mycotoxin production in foods is still a challenge



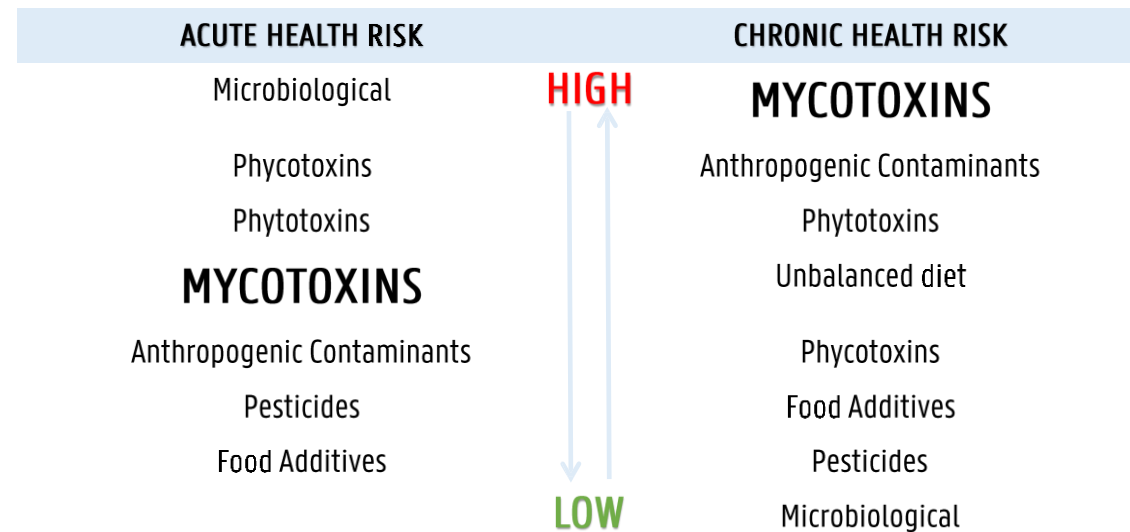
Table 1: Examples of food commodities and aflatoxin contamination levels reported in the literature.

Country	Commodity	Frequency of aflatoxin positive samples	Contamination rate/concentration	Reference
Botswana	Raw peanuts	78% contained aflatoxins	Concentrations ranging 12 to 329microg/kg	4
Nigeria.	Pre-harvest maize	Aspergillus flavus was isolated from 65% of samples	Total aflatoxins ranged 3 to 138 micrograms kg-1 in positive samples	5
	Dried yam chips		Mean concentration of aflatoxin B1:27.1 ppb.	6
	Melon seeds		Aflatoxin B1 above 5 microg/kg in 32.2% of samples	7
Senegal	Peanut oil	Aflatoxin B1 found in over 85% of samples.	Mean contents about 40 ppb,	8
South Africa	Traditionally brewed beers	Two of six commercial beer samples contained aflatoxins	200 and 400 microg l(-1)	9

FOOD SECURITY vs FOOD SAFETY

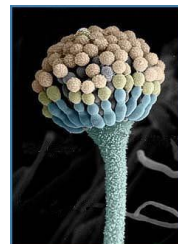
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FOOD SAFETY AS PART OF FOOD SECURITY



MYCOTOXINS AND THEIR CHALLENGES

- **CLIMATE CHANGE:** shift in fungal species
- occurrence of **MODIFIED** modified mycotoxins
- changing **DIETARY HABITS** with vulnerable risk groups
- dealing with **CONTAMINATED FOOD AND FEED:** removal or valorization?
- **DEVELOPING WORLD:** no capacity to perform mycotoxin research and to apply mitigation strategies in terms of equipment and trained personnel



MYCOTOXINS AND THEIR CHALLENGES

- series of TOXIC secondary metabolites, produced by various fungi growing on PLANT PRODUCTS
- ACUTE and CHRONIC toxicity
- ACUTE human mycotoxicoses: 2016, WHO, Tanzania: >14 deaths, and >>> diseased persons (children and elderly)
- CHRONIC IMPACT: ↑ ↑ ↑:

cancer, immune suppression & other pathological conditions

THE CITIZEN

29 JULY 2016

Tanzania: Food Poisoning Linked to 14 Deaths in Two Regions

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Photo: Daily News

By Syriacus Buguzi

Dar es Salaam — Results of laboratory tests conducted on blood and urine samples of people who died or fell ill after eating food believed to have been contaminated in Dodoma and Manyara regions have revealed shocking levels of aflatoxins, The Citizen can report.

The US-based Centre for Disease Control (CDC), which carried out

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- However many diseases outbreaks have been linked to contaminated street foods in Africa.
- A study on the microbial quality of street foods in Accra, Ghana found evidence of *Shigella sonnei*, *Escherichia coli* and *Salmonella spp.*
- A study conducted in Accra, Ghana found evidence of **lead** and **pesticide** (chloropyrifos) contamination in *waakye*, (*Ghanaian dish made from rice and cowpea*), and *fufu*



Ghana



Street food in Tanzania



How to assure a SAFE food supply?

- Integrated policy actions backed up by regulation, surveillance.
- Training of those involved in the food chain environment.

A SUSTAINABLE PATH TOWARDS FOOD SAFETY IN AFRICA

- DEVELOPING WORLD has a LACK of TECHNICAL SUPPORT
- TURN-AROUND-TIMES are POOR
- SMALL-SCALE FARMERS or INFORMAL MARKETS: no AWARENESS in the developing world!
- DEVELOPING WORLD not UP TO DATE with increasing KNOWLEDGE: ~~KNOWLEDGE-TRANSFER~~
- NO REGULATIONS are established by governments





INTERNATIONAL FOOD SAFETY ALLIANCE

A SUSTAINABLE PATH TOWARDS FOOD SAFETY IN AFRICA

WHAT IS THE INTERNATIONAL FOOD SAFETY ALLIANCE AIM AT?

- Educating and training young students & scientists from developing countries with programs suited for their countries
- Building capacity
- Conducting research and developing innovative technologies in terms of suitable mitigation strategies applicable in their countries



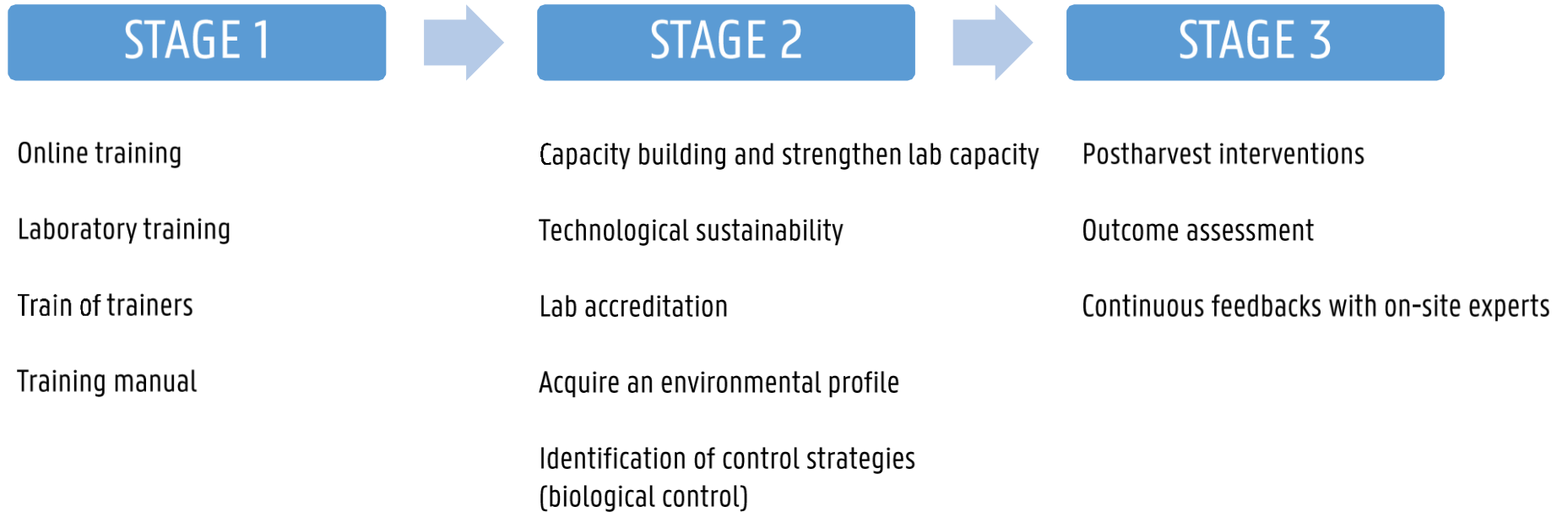
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A SUSTAINABLE PATH TOWARDS FOOD SAFETY IN AFRICA

WHAT IS THE INTERNATIONAL FOOD SAFETY ALLIANCE AIM AT?



IT IS NOT IMPORTANT THAT WE DO THIS...
...IT IS IMPERATIVE!



