

MARS
incorporated

Biosafety: A food business perspective



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Today's conversation

Mars:
Who are we?
What do we do?

Future threats

Existing
threats

Mitigation
Strategies

Conclusions

Mars: a principle-based business



The Five Principles

Quality Responsibility Mutuality Efficiency Freedom

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The Products we make The Brands we have

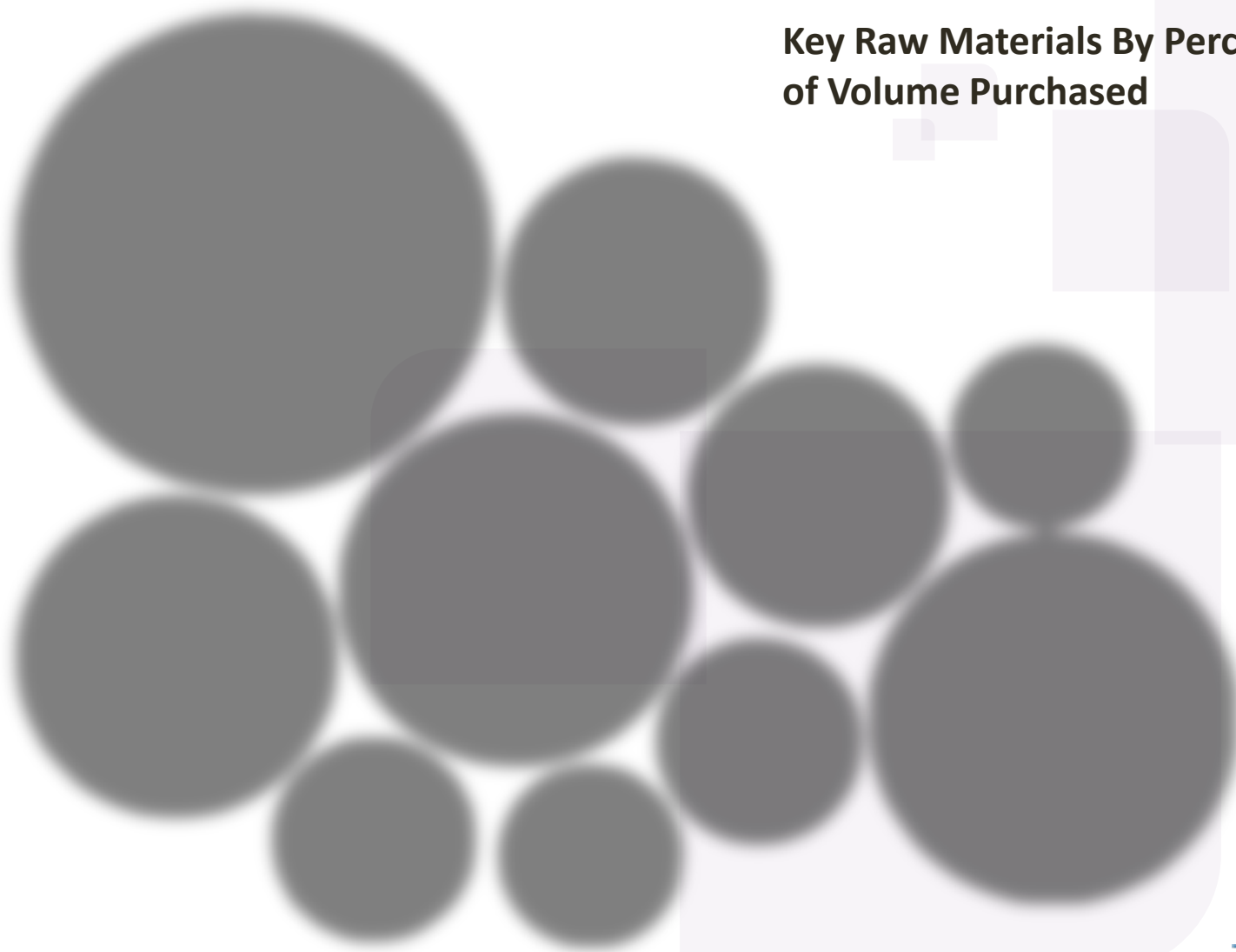


Where do we operate?



Our global agricultural footprint is significant – 6.6 million tonnes of raw materials consumed in 2012

Key Raw Materials By Percentage
of Volume Purchased



Food Safety Challenges we face today

We take for granted that our food supply is safe, although

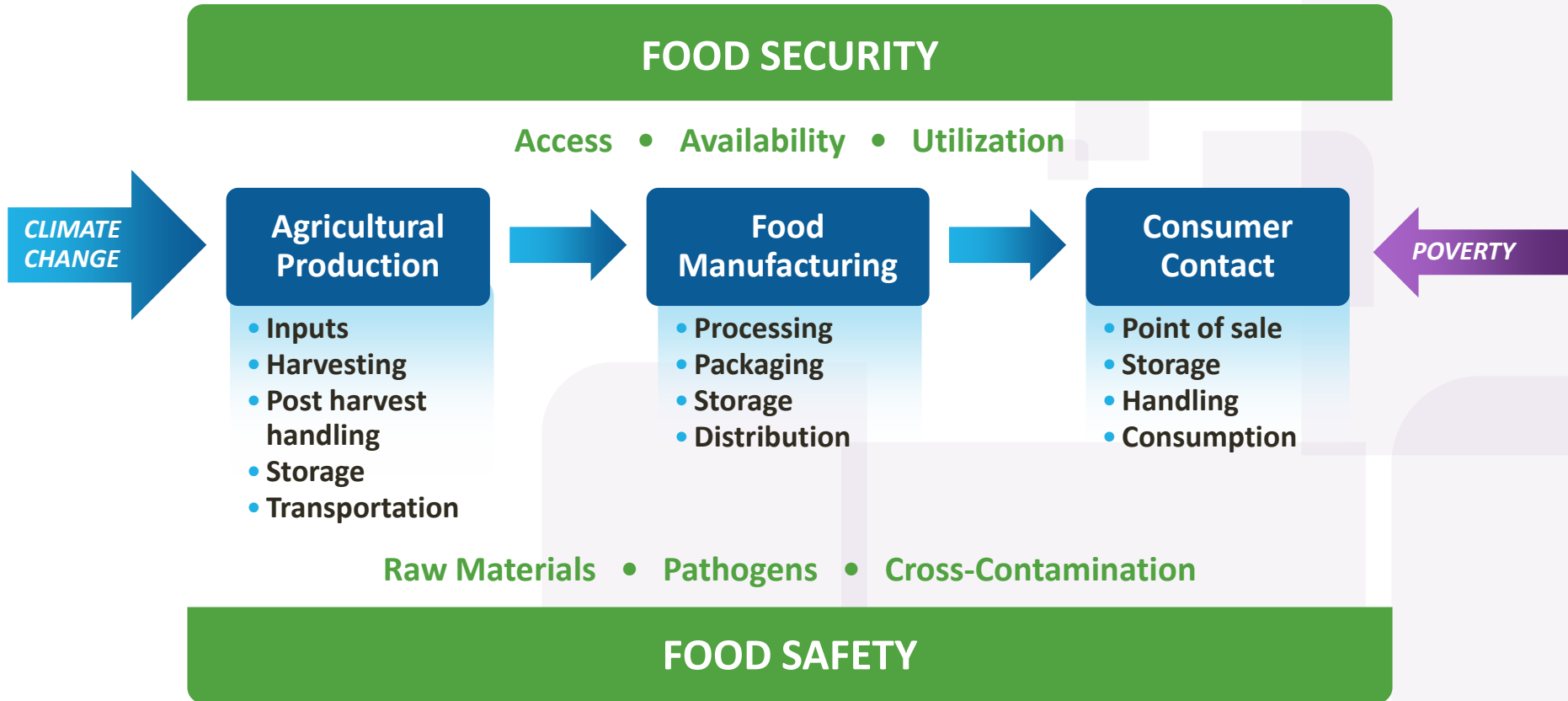


- In emerging regions, diarrhea related to food borne infections is a leading killer of adults and children at almost 2 million annually ...more than TB, HIV/AIDs and malaria
- Globally at least **1/3** of food produced gets lost or wasted—**1.3 billion tons** of food
 - 40% of losses in developing countries at post harvest and processing levels
 - Sub-Saharan Africa losses est. at \$4 billion which could feed 48 million



Sources: 2012 The State of Food Insecurity in the World..FAO, IFAD and WFP; collateral information from WHO; CDC Morbidity and Mortality Weekly Report June 10, 2011; FAO Global Food Losses and Food Waste 2011

Throughout the business supply chain, risks abound that can ultimately impact food safety and security



Mitigating for these risks allows us to:

- Make more food available
- Reduce demand for increased production
- Manage environmental footprint
- Lower food production costs
- Expanded trade opportunities
- Reduced hunger and poverty

Any Food manufacturer is in the business of Food Security

“The world must solve **three food problems simultaneously: end hunger, double food production by 2050, and do both while drastically reducing agriculture’s damage to the environment.**”

Scientific American 12/10/11

**SCIENTIFIC
AMERICAN**

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How can Industry help?



Managing the bio safety risk within a context of running a sustainable business



Chemical Hazards

Biological Hazards

**Commercial
Adulteration**

Physical Hazards

Bioterrorism

New Technologies

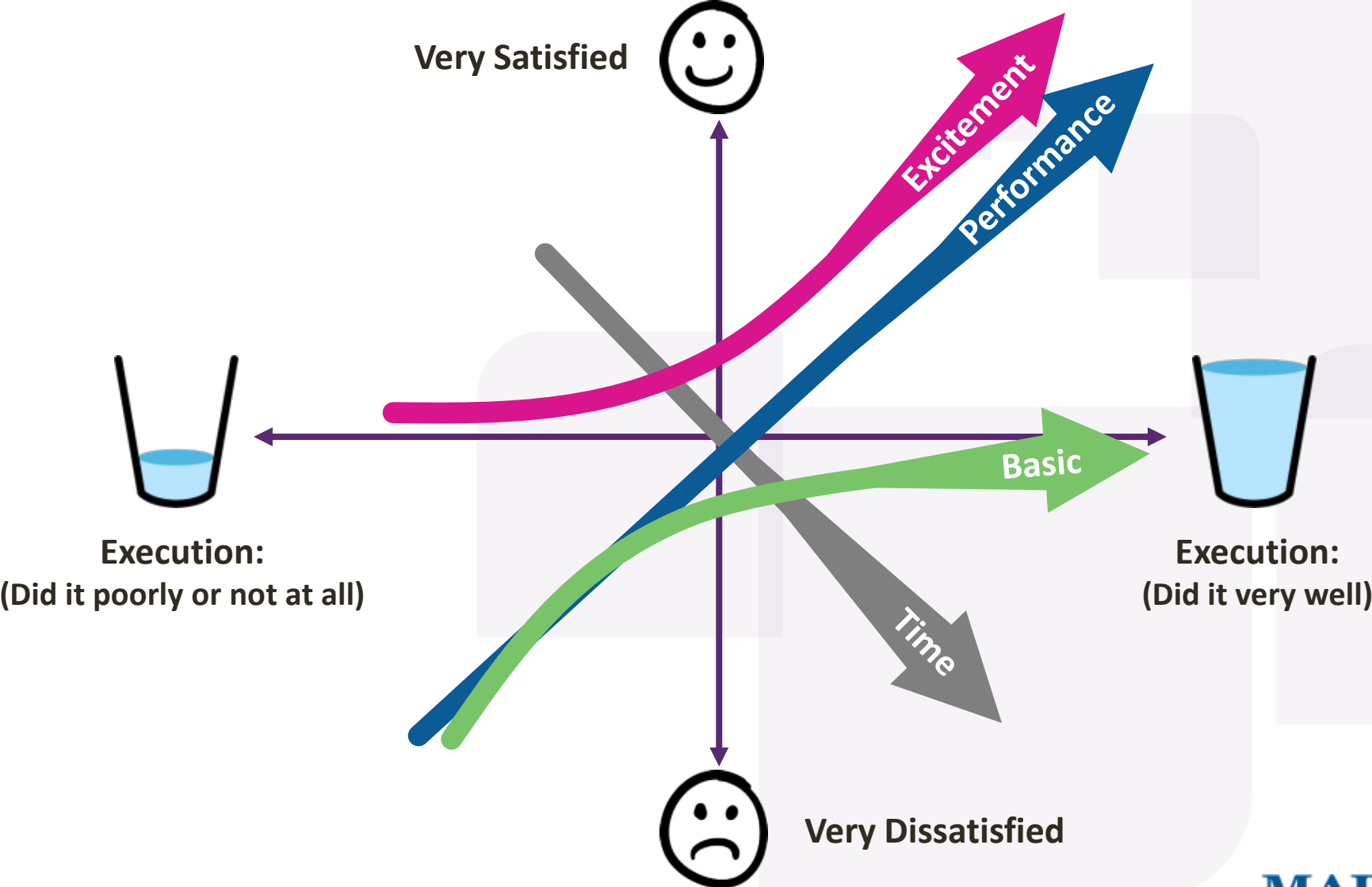
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Nano-technology

Requirements to operate a sustainable business

Meeting the consumer expectations and needs

Meeting consumers expectations and needs



...as a minimum ensure food is **SAFE** and **LEGAL**



Drive rigorous processes from farm to fork



**Obtain safe
raw materials**



**Process as if
contaminated**



**Prevent
recontamination**



Examples of Food Safety Initiatives that can be applied to Biosecurity



Horizon Scanning



Raw Material Pipeline



Driving a Food Safety Culture



Post market surveillance

Horizon Scanning

- **Designed to identify and highlight potential food safety risk trends and threats across the supply chain**
 - Intelligence Driven: scanning several data sources (news, science, social media) to identify emerging risks
 - Information used to drive actions to investigate, validate and quantify potential food safety impact, informing and influencing:
 - *Supplier Quality Assurance to work with the supply chain*
 - *Operational Quality to heighten surveillance at the factory front gates*
 - *Regulatory Affairs to alert and engage appropriate officials when necessary*



Horizon Scanning

Where a Total Quality Management System supports Bio-safety

- **Material Risk Assessments**

- Identify the potential risks associated with raw materials and the production pipeline
 - *Inherent risks coming from the actual materials*
 - *Risks coming from external sources (i.e. tampering and adulteration)*

- **The Supplier Quality Assurance Program**

- Uses information coming from the Materials Risk Assessments to direct actions to mitigate and manage risks
- Strong foundation built upon establishing relationships with suppliers as an added measure to manage potential biosecurity risks
 - *Gather local and regional intelligence about potential threats*



Raw Material Pipeline

Example of Raw Material Verification Process to Ensure Raw Material Quality & Safety

Raw Material: MILK POWDER

- Considered a “High Risk Raw Material”
- Process starts with Material Risk Assessment
 - Identifies and quantifies key risks and likelihood of occurrence
 - Drives material specification
 - Drives supplier audit frequency and focus
 - Drives front gate quality verification audits
- Typical Audit Frequency at Supplier location:
 - 2 to 6 times per year depending on performance / risk
- Typical Testing level
 - Microbiological / Analytical Quality & Safety
 - Performed on every production batch by supplier
 - Audited factory front gate (typically every production batch)
 - Greater than 1,300 analyses performed annually per Milk Powder Supplier



Raw Material Pipeline

Generates data and baseline to allow supplier management and informed standards

Driving a Food Safety Culture

- **Understanding the correlation between a robust Quality Culture and Quality and Food Safety incidents.**

- Metrics available to determine a corporate Quality Culture and how to quantify and apply the data

- *Manufacturing Quality Metrics*

- Right First Time
- Active Management of Consumer Complaints

- *Audits to determine the Quality Culture of employees, suppliers, distribution channels and production facilities*

- Potential risk of product tampering / abuse
- Ensuring one standard of operation across the value chain, including at the point of sourcing



Driving a Food Safety Culture

Post market Surveillance

**Every day,
businesses
generate a
significant amount
of data**



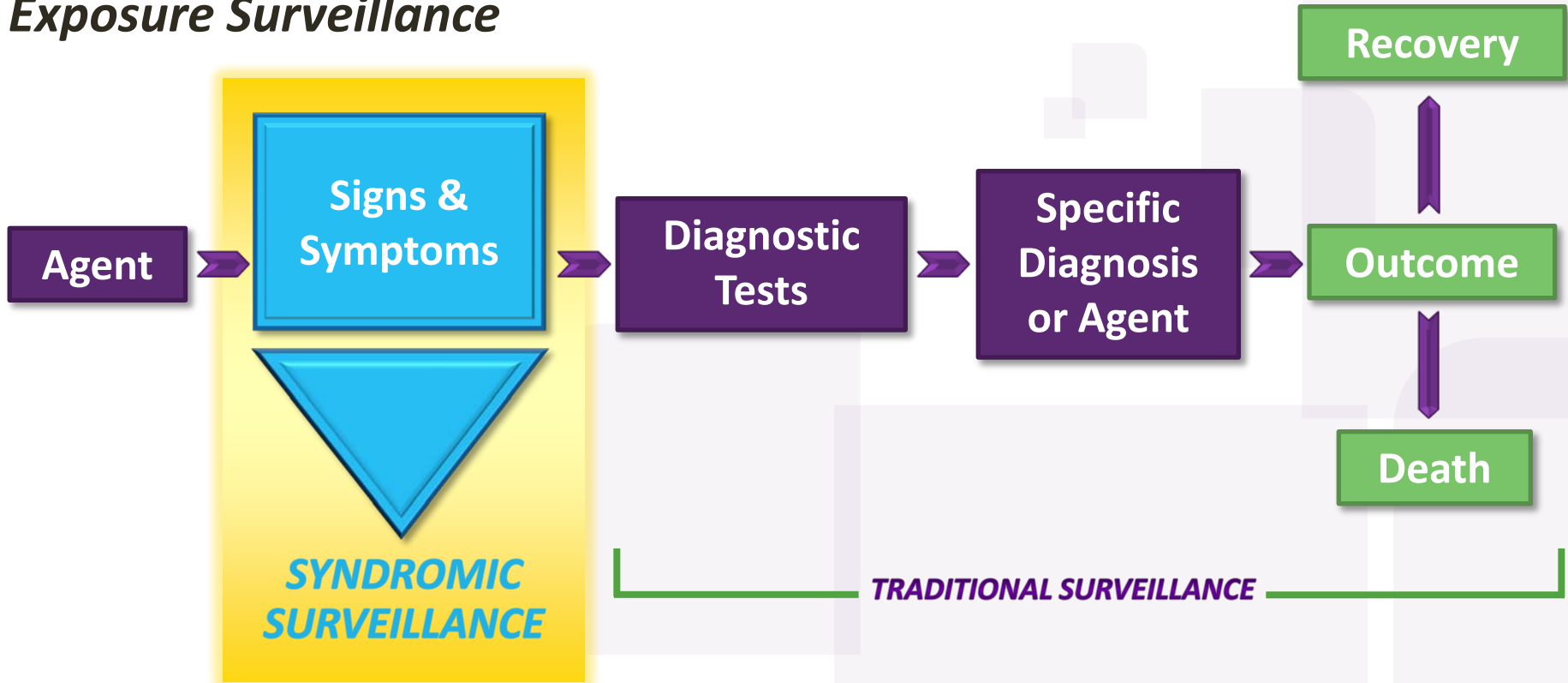
**Post market
surveillance**

Raising the bar for all



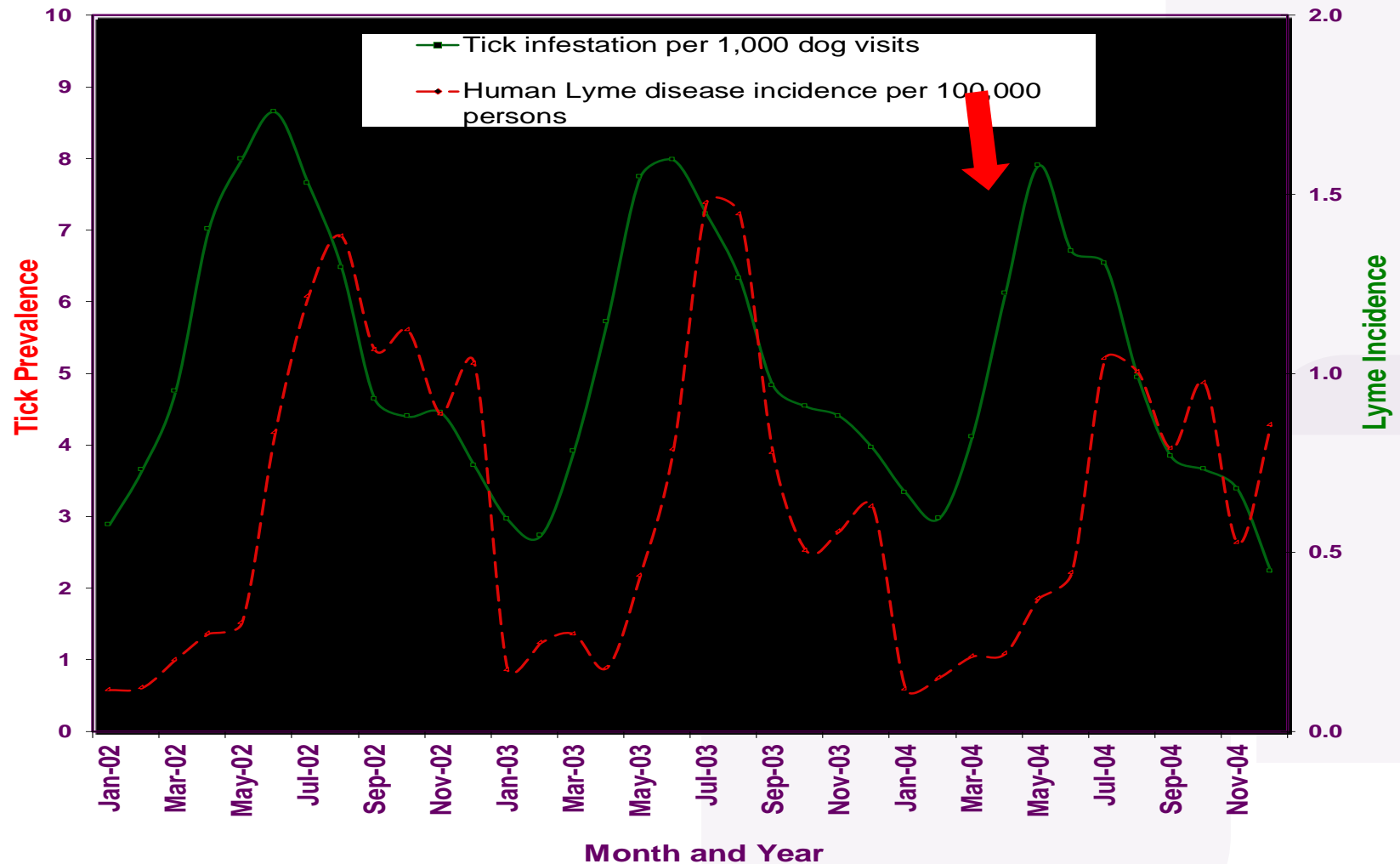
Applying the data: Raising the Bar through Surveillance

Exposure Surveillance



Near real time tracking of selected clinical syndromes in
pets to identify outbreaks of disease related to food safety

An example of how the data can help: Canine Tick Activity & Human Lyme Disease



Overcoming barriers to address bio-safety

Legal and regulatory



Communication platforms to share knowledge



Forums (industry, NGOs)



Role of Bio-safety in Food Security

If Food Safety is the...

“**Assurance that food will not cause harm to the consumer when prepared and eaten according to the intended use.**”

Bio-safety can't be managed alone – it must be thought of in the context of overall business operations

Application of Bio-safety creates foresight to a Food Safety system, ultimately ensuring trust and enabling Food Security

If we see both as part of the same overall system, we are able to leverage standards and scale in principles to maximize the foresight across industry and markets

Addressing food safety needs

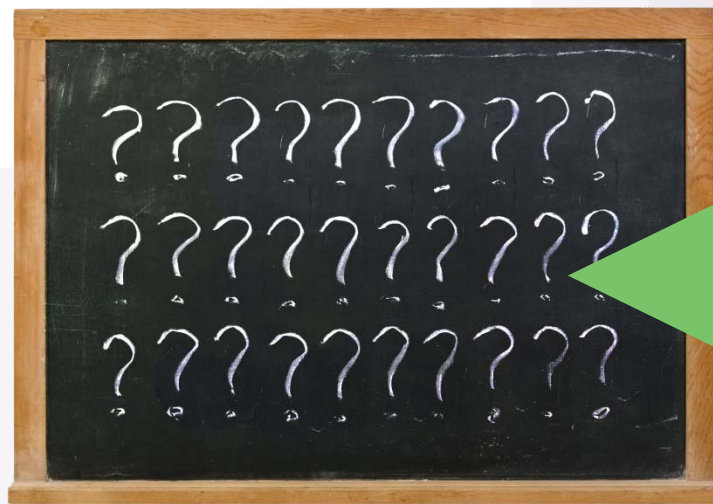
EMERGING markets

*The challenge and approach
IS clear.*



DEVELOPED markets

*The challenge is clear but **NOT**
the approach.*



Shifting
toward
**GREAT
VERTICAL
INTEGRATION**
brings new
challenges

Approaches need to be **ALIGNED** because this is a global challenge

A problem for one company in one region can be a problem for the industry globally... and society



The Food Safety Domino Effect

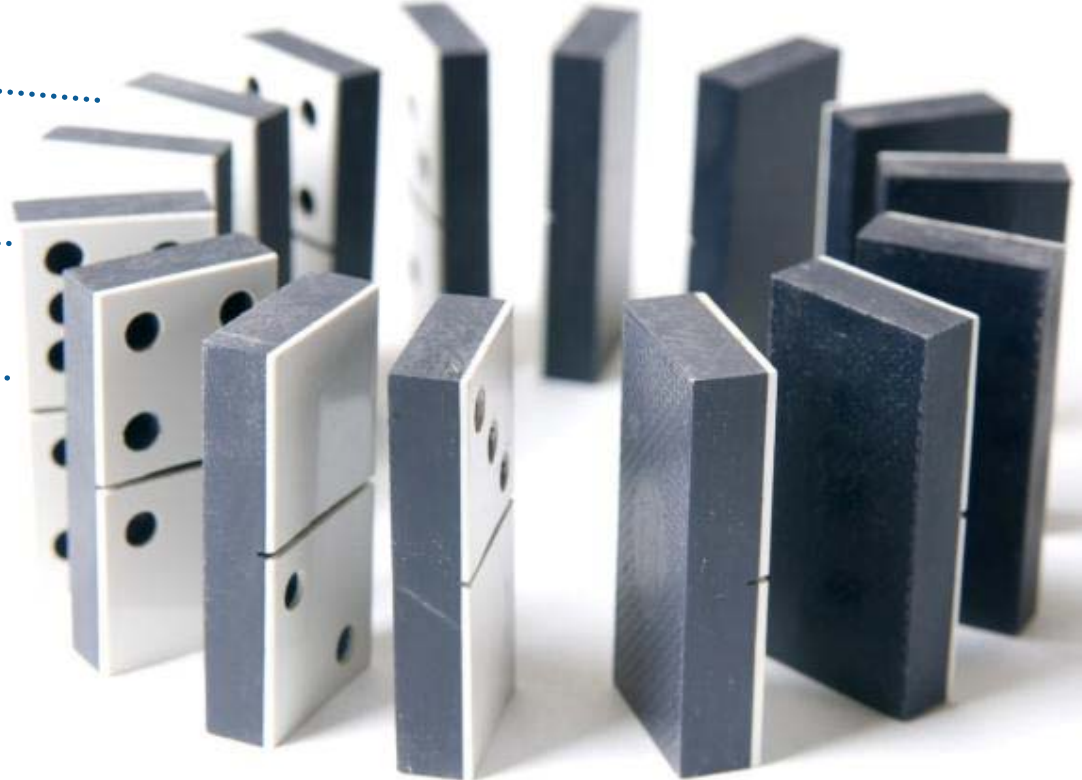
Starts by addressing Food Safety with 1 supplier

- *Establishing a relationship with a customer through clear specification and audit*

Impacts a supply chain

Impacts an industry

Impacts society



In Conclusion

Everyday, Globally, Food businesses...

- Consume millions of raw materials
- Generate millions of hours of experience
- Operate a global network of suppliers and customers

Safe Food is one of the critical pillars of food security and one that we can all significantly contribute to

No single entity can resolve the challenge of safe food but each stakeholder has a role to play in the solution

Measures to manage Food Safety risks are also effective in managing Bio-safety risks

There is an opportunity for industry and regulators to share Best Practice to optimize the effectiveness of Food Safety / Bio-safety efforts

An integrated, multi-dimensional approach across the entire product pipeline is required to ensure comprehensive coverage

THANK YOU