



International Commission on Microbiological
Specifications for Foods (ICMSF)

www.icmsf.org

The *Listeria* Management Challenge

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Since 1962



Disclaimer

This presentation contains facts and comments related to the listeriosis outbreak. References to specific brands / companies are made only where information is already in the public domain.

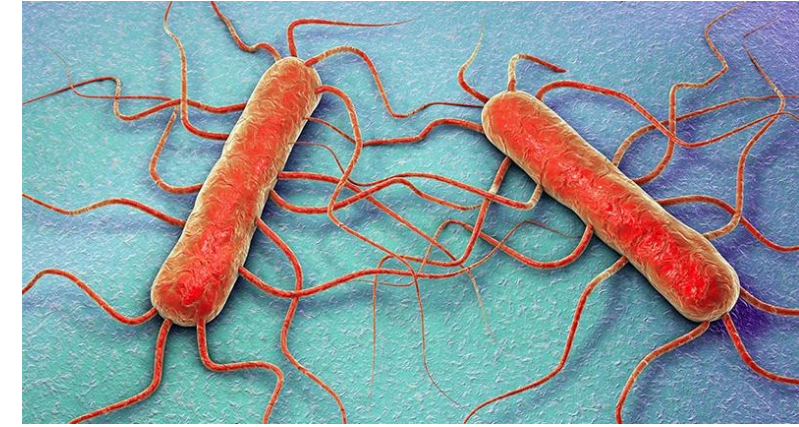
Anelich Consulting is not apportioning blame to any company that may be mentioned.

Presentation

- Brief introduction to *Listeria monocytogenes*
- Listeriosis outbreak in South Africa 2017-2018
- Economic impact
- Industry management challenges
- Government management challenges


Listeria monocytogenes
(*L.m.*) causes **foodborne**
listeriosis in humans

Rare disease \pm 1600 cases per
annum in USA compared to
millions cases of
salmonellosis, so why so
important?



Causes 20-30% deaths
compared to \pm 1% deaths from
salmonellosis

Some Characteristics

- **Environmental saprophyte** - found in soil, decaying vegetation, water, silage, sewage etc – organic matter
- Human food = organic matter – prefers “wet” environments in food processing plants
- **Facultative anaerobe**
- **Grows at refrigeration temperatures** – as low as $-1.5\text{ }^{\circ}\text{C}$
- **Tolerant to salt** – can comfortably withstand 12% salt – can survive to 20% salt
- **Killed by cooking and pasteurization of milk**  **RTE Foods!**

Illnesses - ① Mild form

- ***Febrile gastroenteritis*** in healthy individuals
 - Fever
 - Watery diarrhoea
 - Nausea
 - Headache
 - Pains in joints and muscles
- Typically occurs 24h after ingesting ***high levels*** L.m.
 - Can be 6h – 10 days
- Usually lasts 2 days
 - Can last 1 week
- Under-reported

Illnesses - ② Severe form

- ***Systemic (invasive)*** in high-risk individuals
 - Very young < 1yr
 - Elderly > 65 years
 - Pregnant women
 - Immuno-compromised (weakened immune systems)

Examples

- **Cancer**
- **HIV/AIDS**
- **Diabetes**
- **Organ transplants**
- **Inflammatory diseases e.g. RA**
- **Proton-pump inhibitors (acidity of stomach)**



03 September 2018

Largest Documented Listeriosis Outbreak in History officially over!

**1065 cases
218 deaths**



**937 cases
193 deaths**

Thomas et al., 2020
DOI: 10.1056/NEJMoa1907462

NICD



www.nicd.ac.za

LEADERS IN REFERENCE MICROBIOLOGY, VIROLOGY, EPIDEMIOLOGY, SURVEILLANCE, PUBLIC HEALTH RESEARCH AND TRAINING

 NATIONAL INSTITUTE FOR
COMMUNICABLE DISEASES

Division of the National Health Laboratory Service

Strengthening Capacity For Communicable Disease Response

September-November 2017

September 2017

Call received National Institute for Communicable Diseases (NICD)

07 November 2017

South African Association for Food Science and Technology (SAAFoST)

REQUEST FOR ASSISTANCE – 10-fold INCREASE IN LISTERIA MENINGITIS CASES IN SOUTH AFRICA

Over the last few months the National Institute for Communicable Diseases (NICD) has received reports of a marked increase in the number of cases of *Listeria monocytogenes* meningitis and septicaemia in newborn infants and adults at both private and public hospitals across the country. The incidence rate has risen from 1/1 000 000 general population to 12-15/1 000 000 – a 10-fold increase. Listeriosis carries a high mortality particularly amongst neonates and pregnant women, who are highly susceptible to infection.

November
2017

NICD
WGS!

DATE	CONFIRMED CASES	DEATHS
05 December 2017	550	36
20 December 2017	647	60
03 January 2018 – ID: ST6 strain = outbreak strain (92%)	717	61
12 January 2018	748	67
16 January 2018	767	81
25 January 2018	820	82
06 February 2018	852	107
15 February 2018	872	164
20 February 2018	915	172
27 February 2018	945	176
04 March 2018	948	180
08 March 2018	967	183
29 March 2018	982	189
03 April 2018	999	191
13 April 2018	1011	193

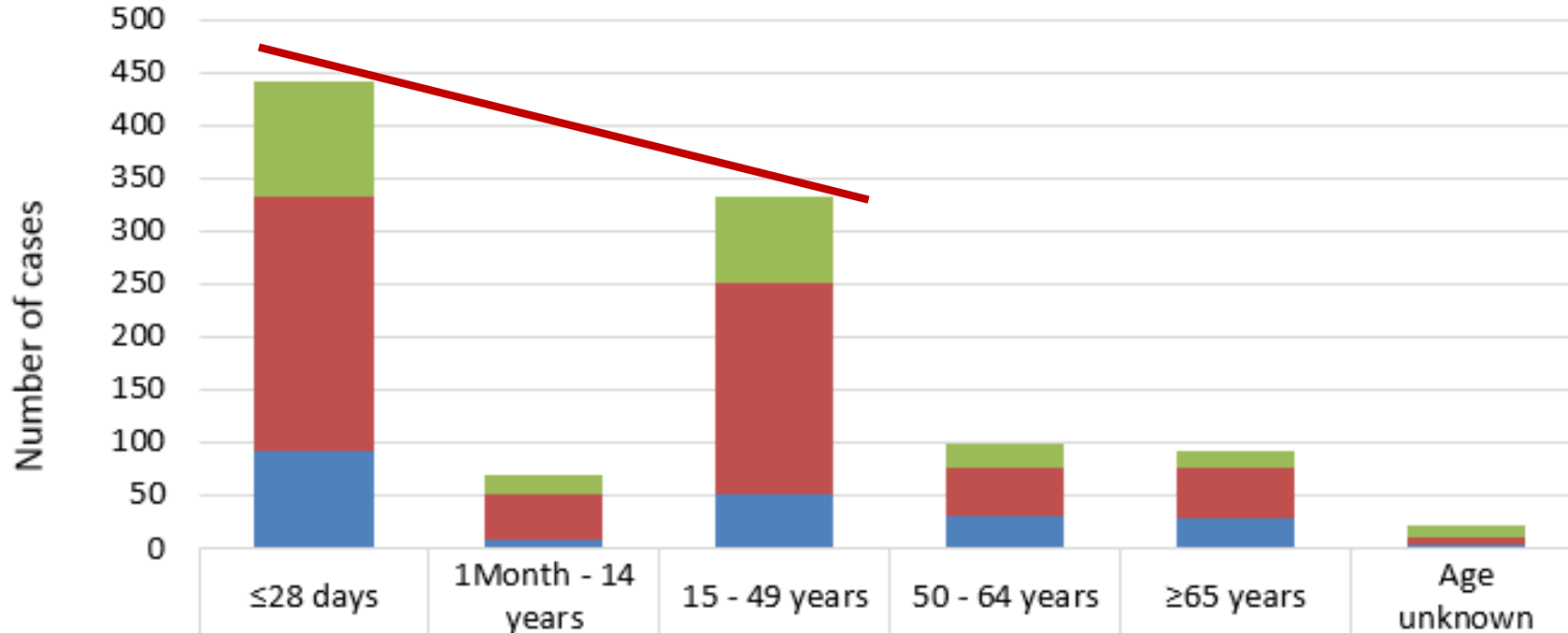
Source!

Miscarriages?

Stats 26 July 2018

Stillbirths?

Elderly?



	≤28 days	1Month - 14 years	15 - 49 years	50 - 64 years	≥65 years	Age unknown
OUTCOME PENDING	110	18	81	24	16	11
DISCHARGED	240	42	201	45	46	8
DIED	92	9	51	30	29	3

NICD



**Polokwane (4h drive North of Johannesburg)
Product & environmental samples = ST6
“Source of outbreak”**

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Listeriosis has deadly company on notifiable list | Health24

https://www.health24.com/News/Public-Health/listeriosis-now-a-category-1-notifiable-medical-condition-20180109

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UPDATED 10 JANUARY 2018

Listeriosis has deadly company on notifiable list

After a deadly outbreak, Listeriosis has been classed as a Category 1

MOST READ **SHARED** **EDITOR'S CHOICE**

SEE: Rare flesh-eating bacteria kill boy within days

These are the 7 new sex trends you need to try in 2018

15 embarrassing penis questions answered

15 December 2017

Listeriosis becomes notifiable disease in South Africa

Rapid spread and unusual behaviour

The disease joins the likes of Ebola, anthrax, whooping cough and plague.

In order for the disease to qualify as notifiable, it would need to meet two of the five points of the qualifying criteria:



Be the first of your friends to like this

Learn about medical conditions

Windows taskbar: ENG 3:54 PM 2018/02/12

<https://www.health24.com/News/Public-Health/listeriosis-now-a-category-1-notifiable-medical-condition-20180109>

Economic Impact

Estimated at ZAR 6 billion (\$ 317 million)

**(SA GDP 2018 - ZAR 5.3 trillion
(\$ 280 billion)**

ONLY direct costs

Economic Impact

April 2019

Class action law suit received by Tiger Brands

Stage One: Concerned with liability

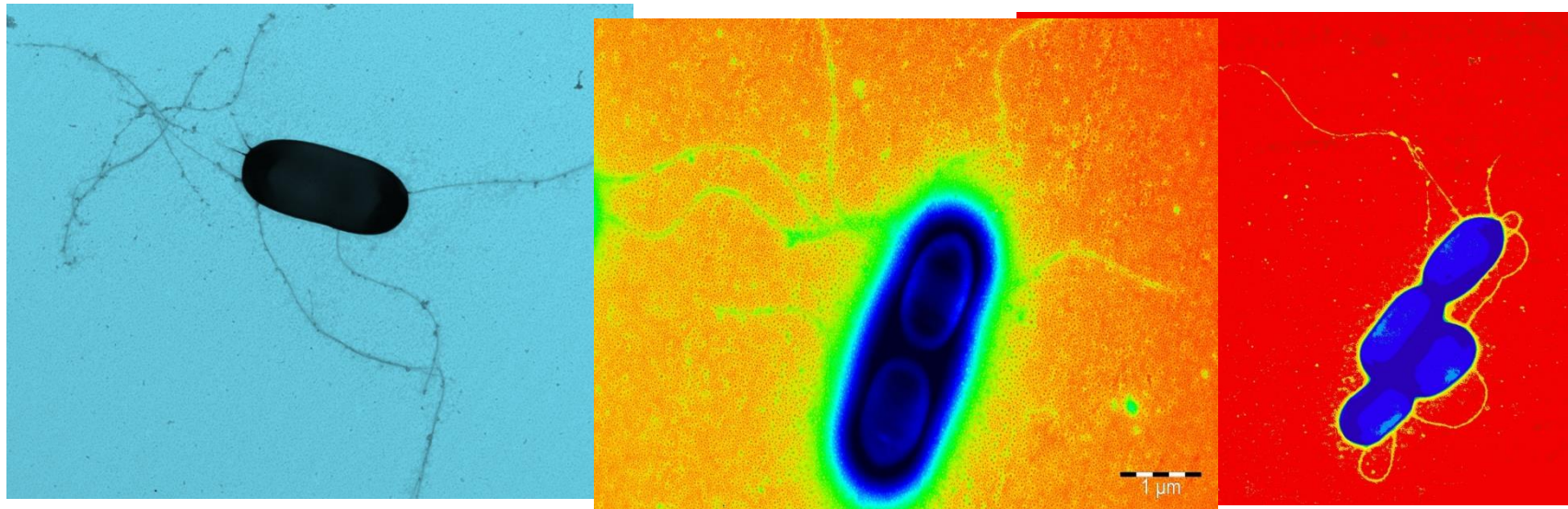
Stage Two (later) will be to deal with quantum of damages

- ***Strict liability clause***
- ***Class actions***
- ***Recalls***

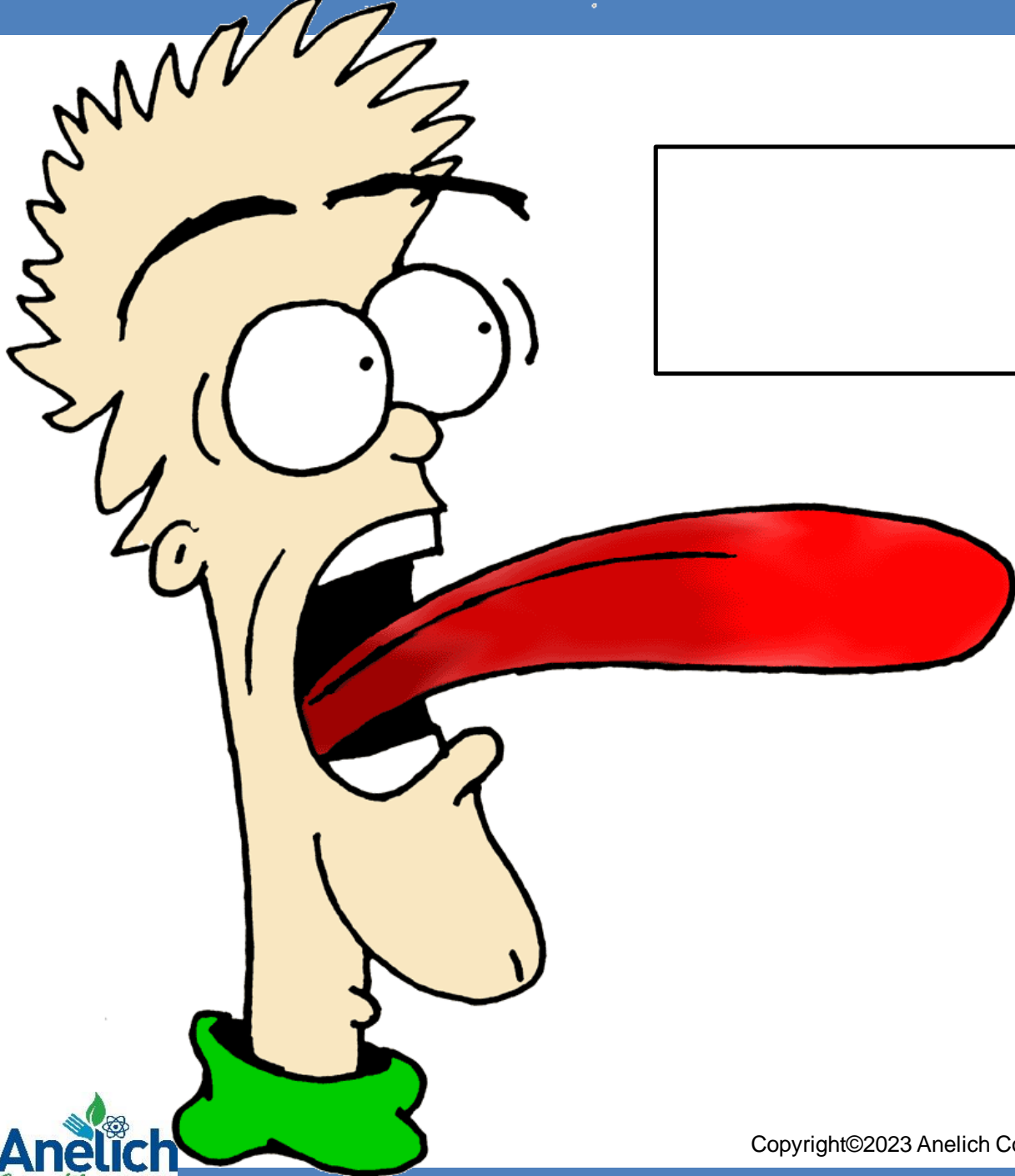
**Consumer
Protection Act**

**Dept Trade &
Industry**

Industry and Government reactions?



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Industry

PANIC!



Government



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Government – Dept Health

Highlighted

- Fragmentation & weaknesses in food control system
- Under-resourcing
- **No** regulated level for *Listeria monocytogenes*
- Lack of public health lab capacity (many pvt labs accredited to ISO 17025)
- Food safety **NOT** high priority (*malaria, TB, HIV*)

‘Urgent need’ for microbiological regulations in SA

MICHAEL ACOTT

LEADING food safety expert Dr Lucia Anelich says the listeriosis outbreak in South Africa has shown the urgent need for appropriate microbiological regulations for processed meats.

In an explanation about Listeria and listeriosis, she highlights that South Africa has no enforceable regulation on the maximum amount of *Listeria monocytogenes* permitted in ready-to-eat (RTE) foods.

biological regulations for processed meats as an urgent priority.”

Anelich says *L. monocytogenes* is present nearly everywhere in the environment – in soil and water, rotting vegetation, in our gardens and similar places.

It can therefore be expected realistically in or on crops (fruit and vegetables) that are grown in the field and on animals and poultry that are reared in the same environment in which *L. monocytogenes* lives naturally.

Positive Change 1

**HACCP (Codex)
regulation
extended
(March 2019)**

**Mandatory for
meat and
chicken
processing
industries**

ANNEXURE B

NAMES AND DATE OF SECTORS OF THE FOOD INDUSTRY AND FOOD HANDLING ENTERPRISE ASSOCIATED WITH SUCH SECTORS LISTED BY THE MINISTER OF HEALTH IN TERMS OF REGULATION 3

SECTOR	FOOD HANDLING ENTERPRISE	DATE LISTED
1) MEAT AND EDIBLE MEAT OFFAL, PREPARATIONS AND PRODUCTS	ALL PROCESSORS OF READY-TO-EAT HEAT TREATED MEAT PRODUCTS AS DEFINED IN SANS 885	WITHIN NINE (9) MONTHS OF THE PUBLICATION OF THIS NOTICE
12) POULTRY, PREPARATIONS AND PRODUCTS	ALL PROCESSORS OF READY-TO-EAT HEAT TREATED POULTRY PRODUCTS AS DEFINED IN SANS 885	WITHIN NINE (9) MONTHS OF THE PUBLICATION OF THIS NOTICE

ISBN 978-0-626-40821-3

SANS 885:2022

Edition 4

**Positive
Change 2**

SA Bureau of Standards

SOUTH AFRICAN NATIONAL STANDARD

Ready to eat processed meat products

Change 2

VC 9100

COMPULSORY SPECIFICATION FOR PROCESSED MEAT PRODUCTS

SCHEDULE



national regulator for
compulsory specifications

1 SCOPE

1.1 This Compulsory Specification applies to the handling, preparation, processing, packaging, refrigeration, freezing, chilling, labeling, marking and storage of heat treated and ready to eat (RTE) processed meat products covered in the scope of **SANS 885, *processed meats products***; and it includes the microbiological and food safety related compositional requirements of these products. The classes of processed meats products are identified as heat treated and ready to eat (RTE) categorized in the respective classes and unspecified RTE products listed in clause 5.3 of SANS 885, which are as follows:

- a) Whole muscle, cured, heat treated products
- b) Whole muscle, uncured, heat treated or partial heat treated and RTE products;
- c) Comminuted, cured, heat treated products;
- d) Comminuted, uncured and heat treated products;
- e) Reformed, cured, heat treated;
- f) Unspecified class i.e. Any other unspecified RTE processed meats product; and
- g) RTE products which are not going to be cooked before consumption with the exclusion of dried and fermented processed meat products i.e. partially heat treated products and RTE e.g. SALAMI.

SANS 885 - ed 4 (2022)

Table 2 — Microbiological requirements — Food safety criteria — 2-Class sampling plan

1	2	3	4	5	6	7
Category of product	Microorganism	Limits			Analytical method	Stage at which criterion applies
		n	c	M		
Ready-to-eat (RTE) products	<i>Salmonella</i>	5	0	Absent in 25 g	SANS 6579	At end of manufacture or port of entry and at point of sale or both, during their shelf-life
Ready-to-eat (RTE) products able to support growth	<i>Listeria monocytogenes</i>	5	0	Absent in 25 g	SANS 11290-1	At end of manufacture or port of entry and at point of sale or both, during their shelf-life
Ready-to-eat (RTE) products unable to support growth	<i>Listeria monocytogenes</i>	5	0	100/g	SANS 11290-2	At end of manufacture or port of entry and at point of sale or both, during their shelf-life

Codex

Food safety criteria

Maintain sanity





agriculture, land reform
& rural development

(DALRRD)

Department:
Agriculture, Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA

VPN 52

**VETERINARY PROCEDURE ON SAMPLING, REMOVAL OF SAMPLES FOR
EXAMINATION, TESTING AND EXAMINING OF MICROBIOLOGICAL TEST RESULTS
OF MEAT (MEAT SAFETY ACT, 2000)**

Raw meat and poultry

Organism	n	c	m	M	Method
<i>Listeria monocytogenes</i>	5	1	Not detected in 25g	<10 cfu/g	ISO 11290-1

Risk?

Food security?

Justification?

Raw meat and poultry PEM programme!

Abattoirs



Listeria spp
(not detected)

Zoning!



davit85/iStock

No zero risk

**Focus resources on
highest risk**

Enforcement?

Ready-To-Eat

Thank
you



Asante



Merci



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