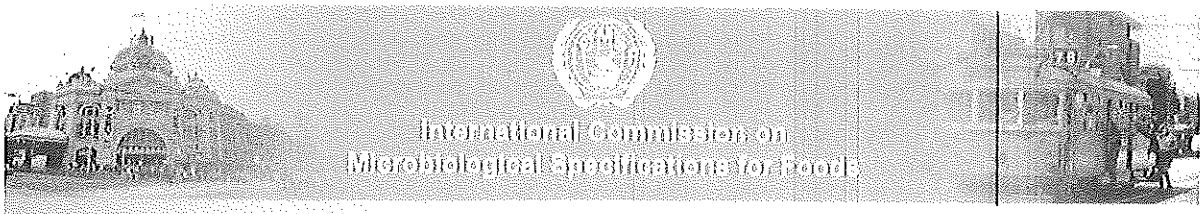


Workshop on:

Microbiological Sampling and Testing in Food Safety Management

"Securing Global Food Safety"

Sebel Albert Park Hotel, Melbourne, Australia

September, 2011

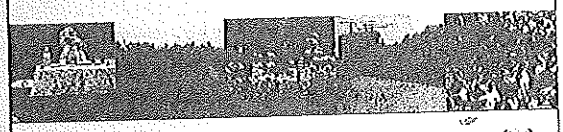
International Commission on Microbiological Specifications for Foods (ICMSF)

International Association for Food Protection

Sampling and monitoring: 1

Sampling Workshop, Bilbao, 26 September 2011

Martine Reij and Marcel Zwietering
Laboratory of Food Microbiology
Wageningen University



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230 FALL SICK AFTER EATING SALMONELLA - CONTAMINATED CHOCOLATE

18-Dec-01 Agence France Presse

DUESSELDORF, German authorities were cited as issuing an EU health alert Tuesday after at least 230 people got food poisoning from eating chocolate contaminated with salmonella.

Tests showed the chocolate contained the rare *Salmonella oranienburg* bacterium, despite heating techniques during production meant to kill bacteria, the ministry said.

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What to do ?

- You have a similar batch of 100.000 chocolate bars in stock (40 pellets).
- The producer says that this batch is OK.
- You do not trust the batch.

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Sample the batch of chocolate bars

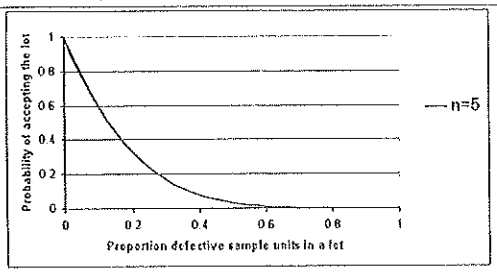
- Batch
- How many samples ?
- Sample unit size ?
- What is the chance of detection ?
- Homogeneous quantity of products = " lot "
- n = 5 (example)
- Analytical unit e.g. 25 grams
- ?

Probability that all samples are negative

$P_{defective}$	*n*=1 negative	*n*=2 negative	*n*=5 negative	*n*=60 negative
	(1- Pdef) =	(1- Pdef)^2 =	(1- Pdef)^5 =	(1- Pdef)^60
0.00	1.00	1.00	1.00	1.00
0.01	0.99	0.98	0.95	0.55
0.05	0.95	0.90	0.77	0.05
0.10	0.90	0.81	0.59	0.00
0.15	0.85	0.72	0.44	0.00
0.20	0.80	0.64	0.33	0.00
0.25	0.75	0.56	0.24	0.00
0.30	0.70	0.49	0.17	0.00

1 % defectives of 100.000 products is still 1000 products

Probability of 5 negative results



Microbiological Criteria Components

- Number of samples (n=10) and size of analytical units (e.g. 25 gram)
- Microbiological limits (m=100 cfu/g)
- Numbers of units to be in conformity (c=2 two out of 10 can be above 100)

- P defective sample ($C>m$)
- P defective batch: depending on n and c

Illusions from Microbiological Criteria

- The microbiological limit m is equal to the FSO

- If the test is negative, the batch is free from pathogens

Probability of accepting a defective lot I