NATIONAL FOOD CONTROL SYSTEMS Opportunities and Constraints

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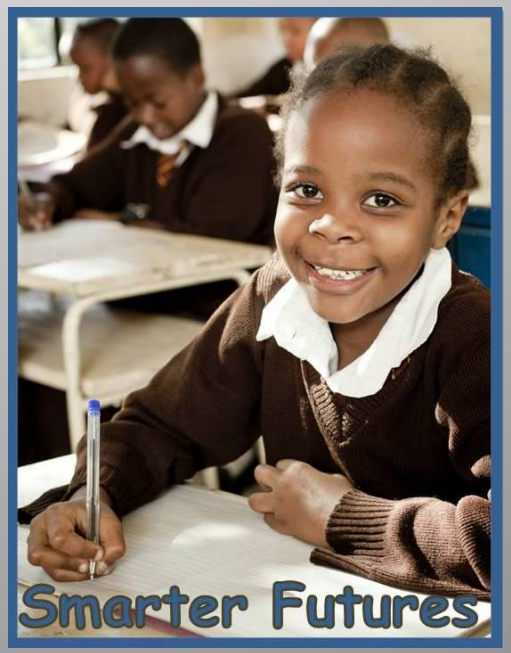
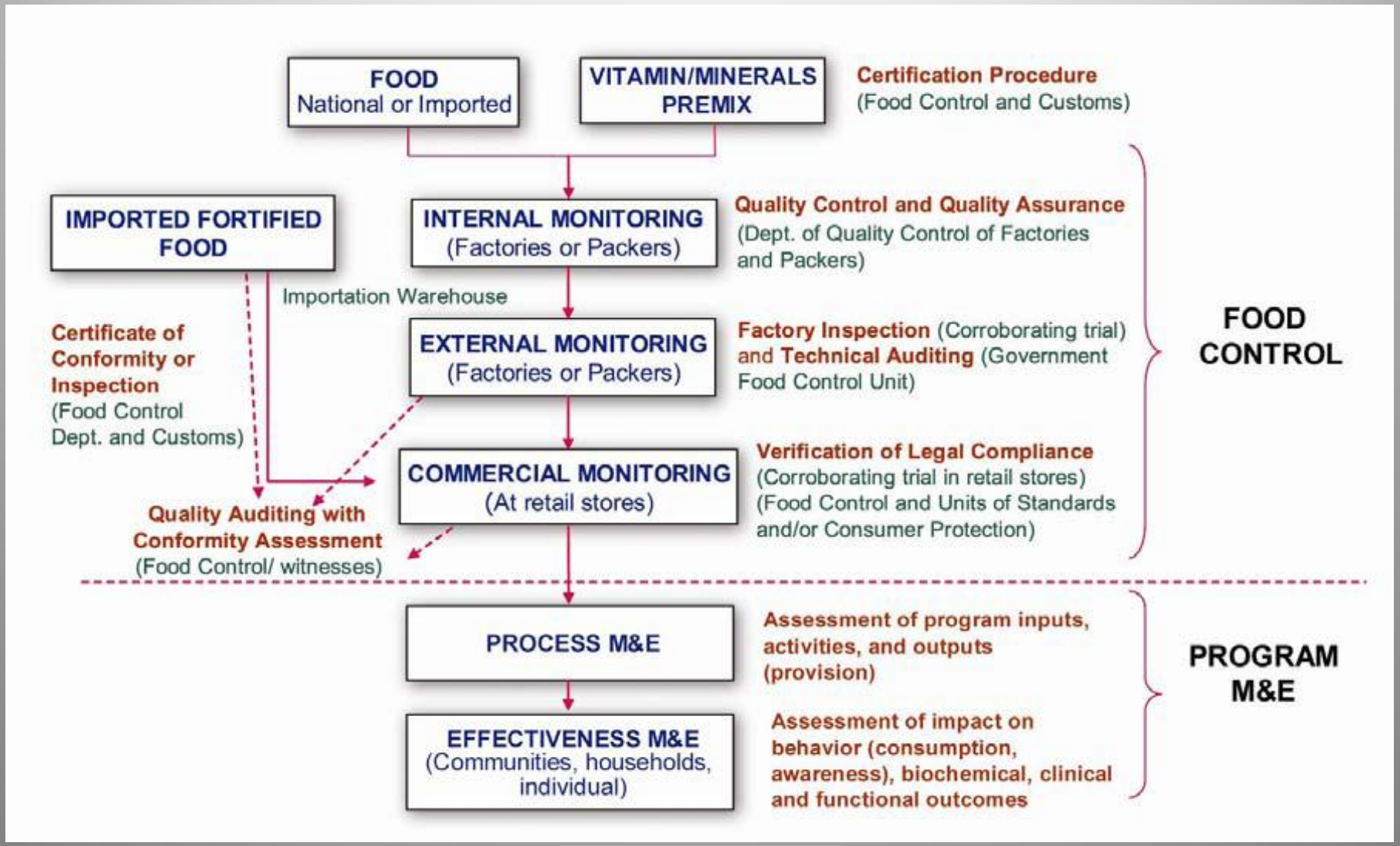
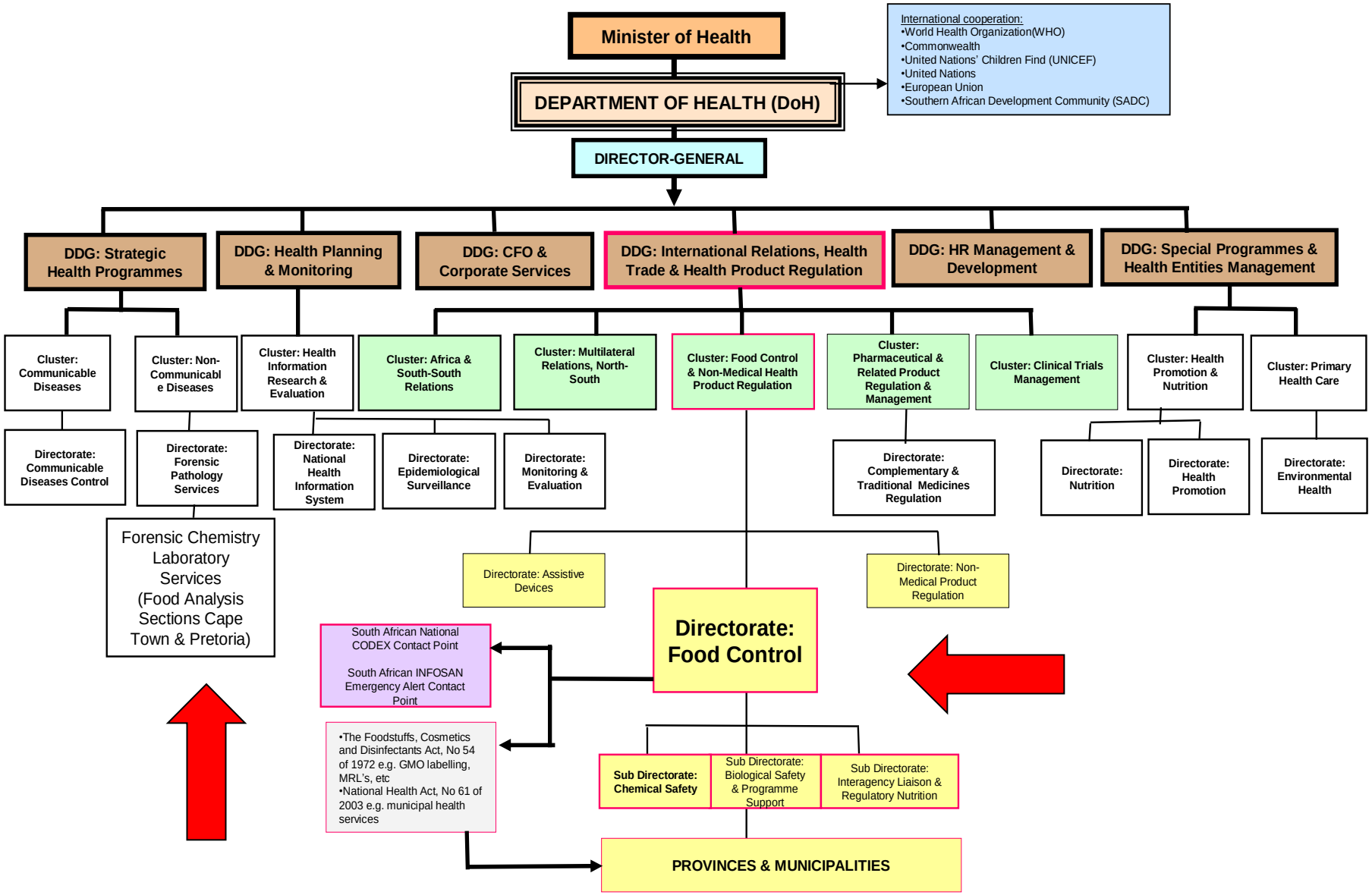


Framework for Monitoring of Flour Fortification Programs



Using South Africa as an example of constraints

Organogram


Minister of Health
DEPARTMENT OF HEALTH (DoH)
International cooperation:
•World Health Organization(WHO)
•Commonwealth
•United Nations' Children Find (UNICEF)
•United Nations
•European Union
•Southern African Development Community (SADC)
DIRECTOR-GENERAL
DDG: Strategic Health Programmes
DDG: Health Planning & Monitoring
DDG: CFO & Corporate Services
DDG: International Relations, Health Trade & Health Product Regulation
DDG: HR Management & Development
DDG: Special Programmes & Health Entities Management
Cluster: Communicable Diseases
Cluster: Non-Communicable Diseases
Cluster: Health Information Research & Evaluation
Cluster: Africa & South-South Relations
Cluster: Multilateral Relations, North-South
Cluster: Food Control & Non-Medical Health Product Regulation
Cluster: Pharmaceutical & Related Product Regulation & Management
Cluster: Clinical Trials Management
Cluster: Health Promotion & Nutrition
Cluster: Primary Health Care
Directorate: Communicable Diseases Control
Directorate: Forensic Pathology Services
Directorate: National Health Information System
Directorate: Epidemiological Surveillance
Directorate: Monitoring & Evaluation
Directorate: Complementary & Traditional Medicines Regulation
Directorate: Nutrition
Directorate: Health Promotion
Directorate: Environmental Health
Forensic Chemistry Laboratory Services (Food Analysis Sections Cape Town & Pretoria)
Directorate: Assistive Devices
Directorate: Non-Medical Product Regulation
Directorate: Food Control
South African National CODEX Contact Point
South African INFOSAN Emergency Alert Contact Point
•The Foodstuffs, Cosmetics and Disinfectants Act, No 54 of 1972 e.g. GMO labelling, MRL's, etc
•National Health Act, No 61 of 2003 e.g. municipal health services
Sub Directorate: Chemical Safety
Sub Directorate: Biological Safety & Programme Support
Sub Directorate: Interagency Liaison & Regulatory Nutrition
PROVINCES & MUNICIPALITIES

Food laboratories

- Only 2 laboratories in country
- Equipment old
- Severe understaffing
- Chronic skills shortage
- Salaries not market related
- Poor turnaround time on analysis

Multiple regulatory authorities, multiple regulations

- Ministry of Agriculture – Grain, Livestock, Fish etc – “Unprocessed”
- Ministry of Health – any “processed” foods
- Water and Forestry – under Min of Agriculture
- Parastatals – SABS – canned fish; PPECB – exports
- Provincial, Metropolitan and District Authorities

- More than 16 different food regulations enacted under various Acts of Parliament
- Local By-laws still exist

- Antique laws permit “any sealed package” to be a sample and “the Government Chemist” is always right

Three Spheres of Government

- National – responsible for overall coordination and organising National Sampling Plans, Emergency Response to food borne illness etc
- Provincial – responsible within own province; some very active some very weak
- Municipal – as above

- National can not tell Provincial or Municipal Authorities to do anything – only “request”

- Food Control Laboratories report back to “client” i.e. Provincial or Municipal but do not copy National.
- Port Health now report to Provincial Government not National Government (only border authority not to do so)

Fortification Consequences

- Inspectors focus on “easy” targets i.e. Big mills so compliance amongst (smaller rural mills) those feeding the most vulnerable groups is viewed as low.
- Food Control not monitoring pre-mix

A Vision for the Future

- Organisation revamp to allow direct line of communication and responsibility
- Port hopping to be monitored through linkage of Customs & Excise into system
- Strengthen “extended detention” system and prosecutions for non-compliance – currently prosecuted under “failure to comply with revenue requirements”

- Coordinate analysis results and analyse centrally – any and every investigation, complaint or analysis to be copied to a central facility charged with data compilation, trend analysis and data mapping plus disseminating results.
- Same facility to “look over the horizon” i.e. Early warning of food borne threats in other countries

- Establish “elite unit” for rapid response, method development etc
- Look to ISO 17025 compliance using “technique” accreditation

Information Resources

- - Sample size, storage and transportation requirements
- - Analysis time, sample tracking and interpretation of results against legislation
- - Possible reasons for non-compliance
- - Media response
- FAQ section for consumers – especially during/after media blitz

NATIONAL REGULATORY MONITORING SYSTEM

Sampling Plans and Implementation

Specific Plans in RSA

- Additives
- Contaminants
- MRL’s
- Mycotoxins
- Nutrition

- Of those 5 plans only nutrition is not a safety issue

- Monitoring for public safety is vastly different – and easier – than monitoring for compliance

Specify Sampling Parameters

- Specific commodity i.e. Fruits, grains etc
- Specific point in food chain i.e. Farm, market, retailer

- For fortification only at the mill

- Do not let inspectors work on random basis

For Fortification

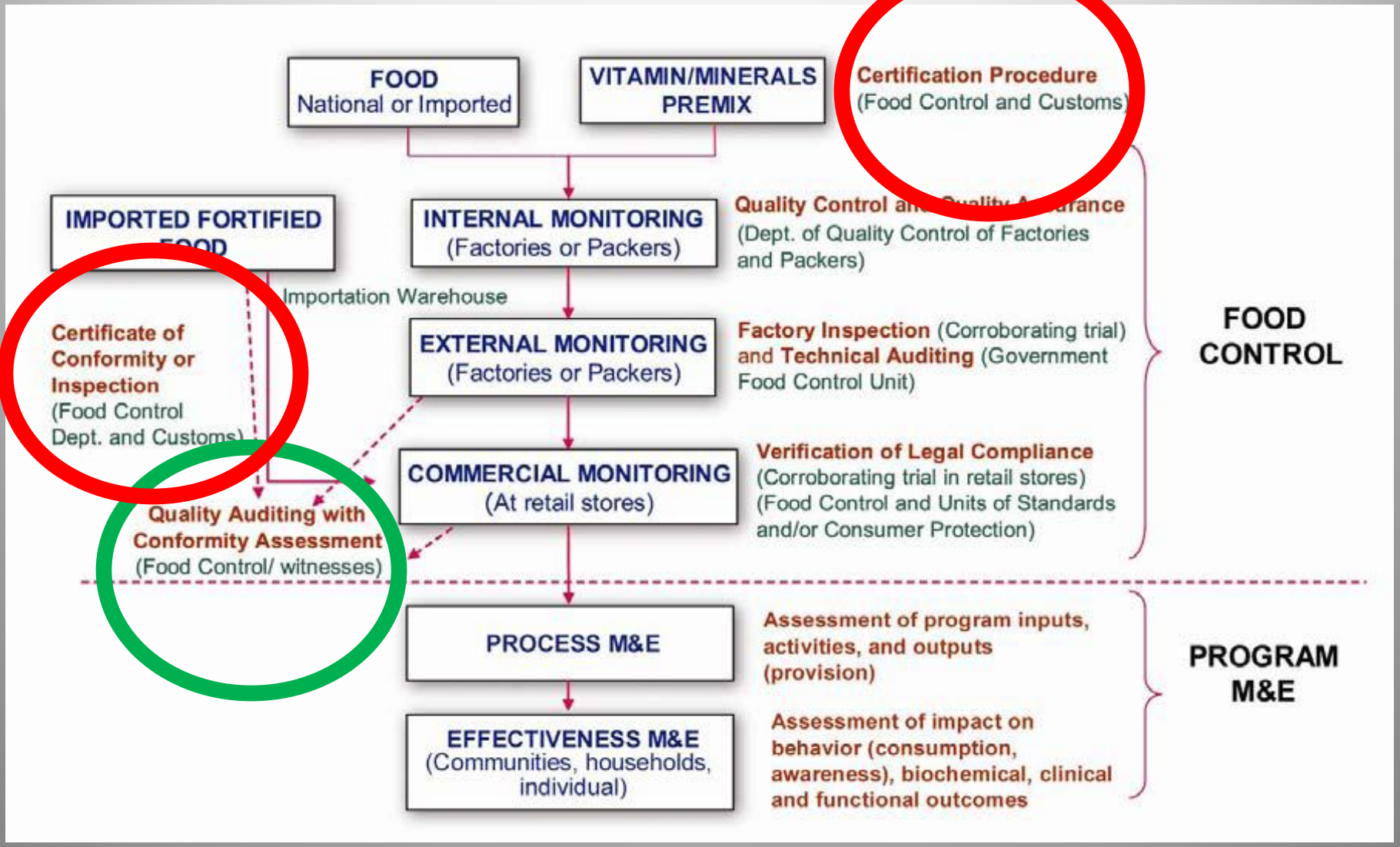
- Food Control, therefore, need to ensure major mills are not “over monitored” due to ease of access
- Question of “risk analysis” – not only to the public from non-compliance but to the fortification programme *per se* because larger millers perceive smaller millers are non-compliant and threaten to pull out in protest

Folic acid and Iron

- Spinach extract and iron filings will conform to specification – analysis will indicate both micronutrients are present and in sufficient quantity - but that is not “fit for purpose”

- Is specifying the iron type a TBT??
- Is specifying a maximum value necessary??

Framework for Monitoring of Flour Fortification Programs



Work Smarter

- Check the pre-mix as “fit for purpose”
- Check pre-mix consumption
- Check production output

- **Compliance established in hours not days/weeks**

- **Low cost, low technology, high level of confidence**

Variability

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Pre-Mix vs Product

- Same laboratories
- Lab's A and D are ISO 17025
- Fortification Formulator uses 28% in generating limits – for the want of a better number the Formulator value has been used.
- GREEN above the limit – non compliant.
- PINK below the limit – non compliant

Pre-Mix % age of theory

	Lab A	Lab B	Lab C	Lab D
Vitamin A	119.2	110.7	108.2	112.2
Thiamine	105.7	86.1	97.1	87.2
Riboflavin	95.1	88.1	102.3	139.5
Niacinamide	96.8	107.9	98.8	93.2
Pyridoxine	113.6	114.3	94.8	75.8
Folic	116.6		102.2	112.0
Iron	89.9		97.4	116.5
Zinc	116.3		99.9	96.8

Product %age of theory

	Lab A	Lab B	Lab C	Lab D
Vitamin A	95.4	47.5	108.0	85.9
Thiamine	79.0		49.5	211.4
Riboflavin	138.4	43.2	89.4	115.4
Niacinamide	65.8	16.3	24.0	145.6
Pyridoxine	123.6	75.0	93.1	255.5
Folic	68.4		130.4	115.2
Iron	90.4		72.2	90.6
Zinc	97.0		76.4	109.4

Pre-Mix % age of theory

	Lab A	Lab B	Lab C	Lab D
Vitamin A	131.5	111.6	116.3	148.3
Thiamine	118.1	118.9	109.2	93.3
Riboflavin	91.1	86.5	97.5	149.0
Niacinamide	101.7	111.5	105.1	88.1
Pyridoxine	132.8	152.9	115.1	83.0
Folic	148.5		142.9	159.1
Iron	91.2		97.1	119.7
Zinc	109.9		99.2	86.1

Product %age of theory

	Lab A	Lab B	Lab C	Lab D
Vitamin A	92.7	50.2	115.9	61.9
Thiamine	101.3		61.2	213.2
Riboflavin	140.2	47.1	85.2	116.7
Niacinamide	70.0	64.8	52.0	154.2
Pyridoxine	142.5	82.2	88.5	222.1
Folic	48.6		119.0	129.1
Iron	104.7		72.8	95.0
Zinc	100.9		82.0	93.8

Pre-Mix % age of theory

	Lab A	Lab B	Lab C	Lab D
Vitamin A	97.4	84.0	85.8	89.5
Thiamine	88.7	78.3	75.5	69.2
Riboflavin	80.7	72.0	79.9	77.2
Niacinamide	77.8	88.8	78.7	72.0
Pyridoxine	92.9	118.7	76.3	76.2
Folic	86.5		81.3	93.2
Iron	72.6		77.7	95.8
Zinc	93.5		81.9	75.9

Product %age of theory

	Lab A	Lab B	Lab C	Lab D
Vitamin A	106.0	60.3	120.9	75.2
Thiamine	71.9		62.8	200.7
Riboflavin	129.2	46.8	80.2	128.3
Niacinamide	70.5	33.6	45.6	141.8
Pyridoxine	163.4	89.5	90.3	281.4
Folic	93.2		143.2	117.7
Iron	76.6		64.5	91.9
Zinc	109.2		76.8	104.4

Pre-Mix % age of theory

	Lab A	Lab B	Lab C	Lab D
Vitamin A	123.2	101.4	111.9	114.6
Thiamine	110.9	95.3	100.9	88.9
Riboflavin	85.3	77.6	84.9	118.0
Niacinamide	92.1	103.4	95.4	84.8
Pyridoxine	121.8	138.4	102.4	83.2
Folic	136.1		129.2	148.2
Iron	82.4		89.0	108.0
Zinc	107.0		91.6	90.1

Product %age of theory

	Lab A	Lab B	Lab C	Lab D
Vitamin A	94.2	51.4	119.0	67.9
Thiamine	74.1		65.5	197.7
Riboflavin	103.1	38.0	74.6	112.8
Niacinamide	77.9	82.9	45.2	152.5
Pyridoxine	141.1	78.5	104.3	241.8
Folic	65.0		115.2	76.7
Iron	74.1		64.3	90.1
Zinc	136.3		78.9	101.3

AACC Check Sample 2010

- Vitamin, Mineral and Proximate (VMP)
- http://www.aaccnet.org/checksample/

	Moisture	Protein	Ash	Iron	Zinc
Mean CV	7.31	3.82	6.81	10.92	6.51
Max	9.30	6.59	21.43	26.78	8.04
Min	4.61	2.24	2.17	5.77	4.65

	Thiamine	Riboflavin	Niacin	Pyrodoxine	Folic acid
Mean CV	26.89	18.35	19.49	17.93	22.24
Max	37.78	21.92	28.48	20.00	40.89
Min	17.44	13.51	11.79	14.77	15.14

	Vitamin A	Cyanocobalamin
Mean CV	70.52	65.01
Max	185.01	166.67
Min	31.24	21.76

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