First African Flour Fortification Workshop 17-20 November 2008

Summary of Training Resources for Millers: Millers Toolkit, Millers Best Practices and Premix Best Practices

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The Flour Fortification Initiative

The Flour Miller's Tool Kit on Fortification

A new tool for helping flour millers understand plan and carry out fortification of wheat flour with vitamins and minerals

- Produced by a team of experts in wheat flour milling, vitamins and mineral nutrition, premix formulation, feeders and equipment, fortified flour quality control and flour and flour product marketing.

  Produced for flour mill owners, managers, production foreman, laboratory chiefs, marketing personnel.

Produced with support from:

The Micronutrient Initiative

I ron
D eficiency
P roject
A dvisory
S ervice

International Association of Operative Millers

U.S. Centers for Disease Control and Prevention

Cargill

International Nutrition Foundation

Caravan Ingredients

Flour Fortification Initiative

Kansas State University

Tufts University
Friedman School of Nutrition Science and Policy

Research Products Company

Hoganas AB

United Nations University

Goal of the Toolkit:

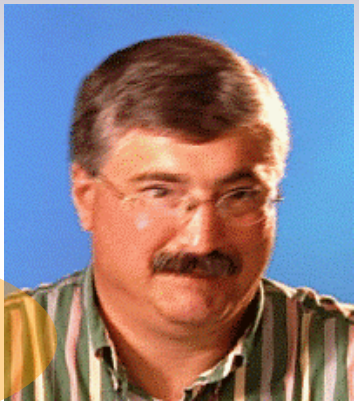
An easy to use reference for flour millers to learn about and produce fortifiedflour.

Main topics covered:

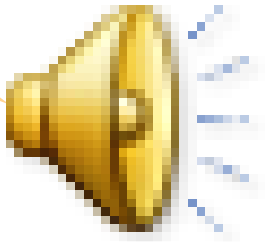
- ***Fortification: why & how***
- ***Premix***
- ***Fortified flour production***
- ***Assuring high quality***
- ***Marketing fortified flour***

Audio Narration

Some slides throughout the presentation have audio narration provided by international milling specialist, Dr. Jeff Gwirtz.



You can "Click "on the small speaker on the slides to hear Dr. Gwirtz's comments.



Video

On some slides there are also short videos to illustrate machinery operation and processes. There are also audio and video examples of radio and TV advertisements on fortified flour in the marketing section

Links

The toolkit brings together key documents that can be used by millers to obtain detailed information on many aspects of fortification

Tips on Using the Toolkit

- It is arranged for easy access to various types of information needed for different aspects of successfully setting up a mill for flour fortification, with consistent quality and for marketing fortified flour.
- The “Table of Contents” and the “Section Heading” pages show what each section contains.
- Many sections contains links to video footage, photographs, sound clips, additional documents and resources.

TABLE OF CONTENTS

Users can go to any of the main sections of the toolkit using the buttons

Millers Toolkit Formats

- CDs in Arabic, Chinese, English, Russian,
- French and Spanish: under development
- On-line version in English available at www.sph.emory.edu/wheatflour

Millers Best Practices for Fortification

Purpose: Designed to Complement Existing Documents and Manuals

- Define Basic and Best Practices for Millers and Food Control Authorities
- Provide set of conditions for Basic and Best Practices

NOTE: Food control authorities must ensure level playing field for both national producers and importers to avoid potential WTO conflicts

Topics covered:

- Quality systems
- Premixes
- Feeders
- Fortification Set-up
- Fortification Process
- Mill Quality Control
- Quality Assurance
- Record Keeping
- Comparative Check List

Quality Systems:

- Good Manufacturing Practices*
- ISO 9000-2000 series
- HACCP
- Total Quality Management

***As a minimum requirement**

Premixes

- Specifications
- Ordering
- Storage
- Handling at the Mill
- Mill preblends

Feeders

- Volumetric
- Gravimetric
- Loss in Weight
- Types
  - Screw feeders
  - Disc feeders
  - Drum/roll feeders

Fortification: Set up and Process

- Feeder Calibration
- Feeder placement
  - Gravity feed
  - Blow line feed
- Electrical interlock system
- Continuous monitoring system
- Additional mixing conveyor

Mill Quality Control and Quality Assurance

- Sampling
  - Sampling point
  - Sampling frequency
- Qualitative testing
  - Iron spot Test
- Quantitative testing
  - Spectrophotometric
  - AA IAS External Quantitative Analysis
- Reference Laboratory Samples and analysis
  - Vitamins and Minerals
  - Minerals
- Premix Usage Monitoring
- Usage Reconciliation
- Documentation

Basic/Best Practices Matrix - Example

Component	Basic Practice	Indicator	Best Practice	Indicator
Quality system	GMPs	GMP Manual docs	HACCP ISO	Manuals Docs 3rd party audits
Premix				
Feeders				
Fortification Practices				

Premix Manufacturers Best Practices Document

- Designed to provide information to Premix Manufacturers for the production, distribution and procurement of premixes for flour fortification.
- Designed for use by Premix Manufacturers and for millers to ensure the manufacture and procurement of good quality premixes.
- Good quality premixes will ensure that flour fortification programmes will have the intended public health impact
- Document was prepared with input from micronutrient and premix suppliers, technical consultants and millers
- Endorsed by the participants of the Atlanta Fortification Guidelines workshop in March 2008

Premix Manufacturers Best Practices Document

- Consists of 12 sections covering the following topics for Premix Manufacturers.
- Introduction and Rationale
- Cereal Fortification
- Premix formulation and Ingredients
- Premix Ordering and Tenders
- Premix Manufacturing
- Quality Control

Premix Manufacturers Best Practices Document

- Consists of 12 sections covering the following topics for Millers and Buyers of Premix.
- Technical Information and Labeling
- Mill Responsibilities and Supplier Relationships
- Premix Pricing and Quotations

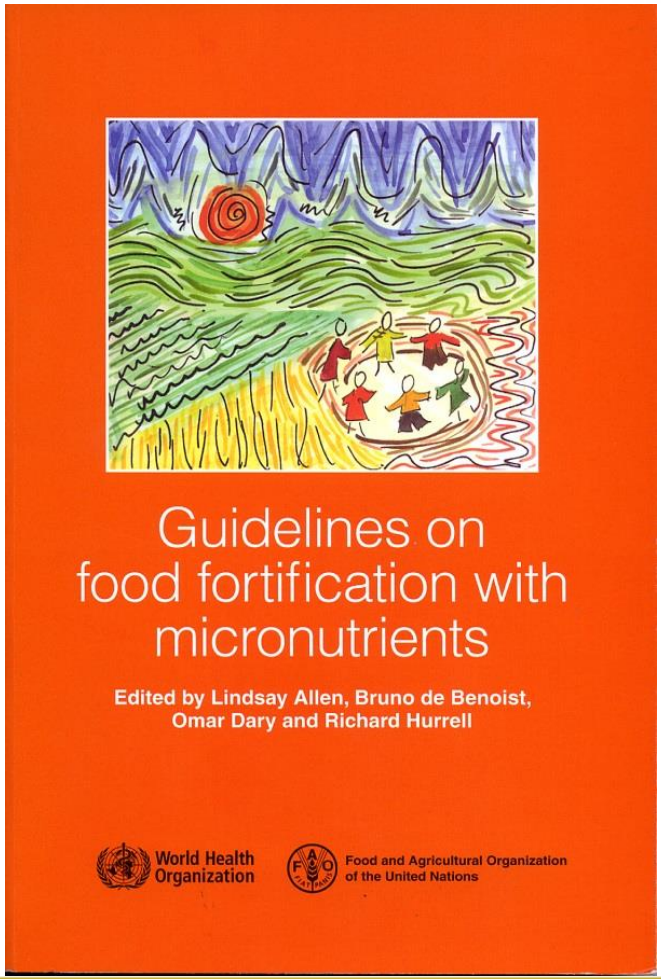
Premix Manufacturers Best Practices

- Specific changes to the document covering the following.
  - Provide third party technical assistance to millers and premix manufacturers when required through the current premix best practices sub-group of TTSG with 48 hour response
  - Link recommendations from Iron Working Group e.g choice of iron powder must be based on demonstrated effectiveness i.e. electrolytic iron
  - Note that NaFeEDTA only has JECFA specification
  - Excipient ingredients choice affects Specific Gravity of premix. If changes are made feeder recalibrations required.

Premix Manufacturers Best Practices Groups Future Activities

- Develop links with WHO Food Fortification Guidelines
- Electronic versions to be made available at all IAOM meetings and conferences
- Post documents on FFI TTSG web pages
- Conduct effectiveness survey of the document among TTSG network by 1 Qtr 2009

WHO/FAO Guidelines Book and CD



- 2006 WHO/FAO "Guidelines on Food Fortification With Micronutrients"

Practical Guidelines Workshop Atlanta 2008

- Objective to provide practical guidelines on recommended levels of 5 potential micronutrients based on current nutrition science
  - Iron, Zinc
  - Vitamin A, Folic Acid, B_{12}
- Working groups for each micronutrient and a consumption group
- Multi-stakeholder representation

Recommended Fortification Levels

Second Technical Workshop on Wheat Flour Fortification
April 2008 Atlanta

			Per Capita Wheat Availability (g/day) *(proxy for wheat flour intake)*			
Nutrient	**Type of Flour**	**Fortificant**	**<75**	**75-149**	**150-300**	**>300**
Iron	Low Extraction	NaFeEDTA Sulfate/Fumarate Electrolytic powder	40 ppm 60 ppm Not recommended	40 ppm 60 ppm Not recommended	20 ppm 30 ppm 60 ppm	15 ppm 20 ppm 40 ppm
	High Extraction	NaFeEDTA	40 ppm	40 ppm	20 ppm	15 ppm
Zinc	Low Extraction	Zinc Oxide	95 ppm	55 ppm	40 ppm	30 ppm
	High Extraction	Zinc Oxide	100 ppm	100 ppm	80 ppm	70 ppm
Folic Acid	Low or High Extraction	Folic Acid	5.0 ppm	2.6 ppm	1.3 ppm	1.0 ppm
Vitamin B12	Low or High Extraction	Cyancobalamin	0.04 ppm	0.02 ppm	0.01 ppm	0.008 ppm
Vitamin A	Low or High Extraction	Vitamin A palmitate	5.9 ppm	3.0 ppm	1.5 ppm	1.0 ppm

References

- Fortification Flour Handbook 2005 - MI
- Millers Fortification Toolkit CD FFI/IDPAS
- Regulatory Monitoring Manual PAHO
- Food Fortification Guidelines Handbook 2006 – WHO
- Atlanta Guidelines Workshop 2008 Summary Report

Website Reference and Electronic Document Source
The Flour Fortification Initiative
www.sph.emory.edu/wheatflour