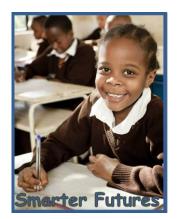
#### Food Fortification Legislation and Standards – Theoretical considerations

Quentin Johnson (with contributions from Philip Randall)





# Why does a country need food standards, regulations and laws?

- Standards provide a specification for foods that will be safe and nutritious to consume.
- Standards guide the food industry to produce and import safe foods.
- Standards help to create a "level playing field" for the food industry.
- Standards facilitate free trade across national boundaries and help eliminate protectionism

# Why does a country need food standards, regulations and laws 2?

- Laws create the legal framework for both standards and regulations.
- Regulations provide the food control authorities to be able to inspect and monitor the production of fortified foods to a standard
- Regulations provide the authorities with the mechanism to enforce the standards through inspection and corrective actions

### 2 Commonly asked Questions

- What to add?
- How much to add?
- There have been 2 international scientific workshops and 1 WHO/FAO publication to provide guidance and answers to these 2 questions based on most current nutrition and science knowledge.
  - Cuernavaca, Mexico, 2004 on Iron and Folic Acid
  - WHO/FAO Guidelines on Food Fortification with Micronutrients, 2006
  - Stone Mountain, Atlanta, USA 2008 on 5 micronutrients

### WHO FAO Guidelines on Food Fortification with Micronutrients

- Resource for governments and agencies implementing or considering food fortification
- Source of information for scientists, nutritionists, technologists and the food industry.
- General principles for effective fortification programs

## Atlanta Workshop 2008

- Focused on 5 micronutrients
  - Vitamins: A, B12, Folic Acid
  - Minerals: Iron, Zinc
- 6 scientific working groups:
  - One for each micronutrient
  - One on consumption data
- Groups composed of representatives from academia, international agencies, milling industry, vitamin, mineral and premix suppliers

### Maize and wheat flour fortification

- Is a preventive food-based approach to improve micronutrient status of populations over time
- Can be integrated with other interventions in the efforts to reduce vitamin and mineral deficiencies
- Should be considered when industrially produced flour is regularly consumed by large population groups
- Most effective if mandated at the national level

### Nutrients to add: Decisions to be taken

- Nutritional needs and deficiencies of the population;
- Usual consumption profile of "fortifiable" flour and food
- Sensory and physical effects of the fortificant nutrients on flour and flour products
- Fortification of other food vehicles
- Consumption of vitamin and mineral supplements
- Costs

Fortifiable flour is defined as flour produced in registered mills with a rated capacity of 20 tons per day

## Flour Fortification Programmes

- Should include appropriate Quality Assurance and Quality Control (QA/QC) systems at mills
- Regulatory and public health monitoring of the nutrient content of fortified foods
- Assessment of the nutritional/health impacts of the fortification strategies.

### 2008 Workshop Recommendations

Nutrient	Type of flour (extraction)	Fortificant	Level of nutrient to be added (parts per million) By per capita wheat flour intake (g/day) <75 75-149 150-300 >300			
			g/day	g/day	g/day	g/day
Iron	Low	NaFeEDTA Sulfate/Fumarate Electrolytic	40 60 NR	40 60 NR	20 30 60	15 20 40
	High	NaFeEDTA	40	40	20	15
Zinc	Low	Zinc Oxide	95	55	40	30
	High	Zinc Oxide	100	100	80	70
Folic Acid	Low or High	Folic Acid	5.0	2.6	1.3	1.0
Vitamin B12	Low or High	Cyancobalamin	0.04	0.02	0.01	0.008
Vitamin A	Low or High	Vitamin A palmitate	5.9	3.0	1.5	1.0

# Atlanta Workshop Recommendations: WHO Consensus Statement issued

• Following a review of the scientific papers, the findings and recommendations of the Atlanta workshop, the Micronutrient Unit of the World Health Organization issued a consensus statement on the recommendations of the Atlanta workshop in 2009.

### Statement Development Process

- Statement prepared by the core group led by
  - WHO's Department of Nutrition for Health and Development in close collaboration with FAO, the nutrition section of UNICEF, GAIN, MI and FFI
  - The core group evaluated the commissioned scientific reviews prepared by expert working groups
  - Approved by WHO Guideline Review Committee in interim period year 2008
  - These recommendations remain valid until today
  - WHO headquarters in Geneva will initiate a review following formal WHO Handbook for Guideline Development procedures in 2010
  - WHO currently reviewing the Recommendations for fortification of wheat flour and maize flour
  - Updated recommendations expected to be published 2016/2017

#### Recommendations on Wheat and Maize Flour Fortification Meeting Report: Interim Consensus Statement

#### http://www.who.int/nutrition/ Available in UN languages English

Russian Chinese French Spanish

#### Suggested citation

WHO, FAO, UNICEF, GAIN, MI, & FFI. Recommendations on wheat and maize flour fortification. Meeting Report: Interim Consensus Statement. Geneva, World Health Organization, 2009

(http://www.who.int/nutrition/publications/micronutrients/wheat\_maize\_fo rt.pdf, accessed [date]).

#### World Health Organization

Recommendations on Wheat and Maize Flour Fortification Meeting Report: Interim Consensus Statement

#### PURPOSE

This subtrant is based on scientific reviews papered for A Plan Frinfinian Institute (PR) therein workshop held in Source Mexaturia, GL (M a 2008 where various argumentations and various after relevant subcholder more and dissued specific production cannowshol using based on the effort beigging planeted in maintain statistic site galar for the frind areas. The just transmerter fields the polarity of the Mori Mehnhou areas. The just transmerter fields the polarity of the Mori Mehnhou areas. The just transmerter fields the polarity of the Mori Mehnhou (GAN), the Kornauriset histoire (MI) and FR. It is transfer for an ele and internation in the Mori Mehnhou (GAN). The Kornauriset histoire (MI) and FR. It is transfer for an elevation of floar for frictions programs as public health intervention.

#### BACKGR

WHO and RAO published in 2006 the Guidalines on Food Fortification with Niconstriants (WHO/FAO, 2006). These general guidelines, written from a nutrition and public health perspective are a resource for governments and agencies implementing or considering food fortification and a source of information for scientists, technologists and the food industry. Some basic principles for effective for tification programs along with furtificants' physical characteristics, selection and use with specific fund vehicles are described. For tification of widel distributed and consumed foods has the potential to improve the nutritional status of a large proportion of the population, and neither requires changes in dietary patterns nor individual decision for compliance. Technological issues to food fortification need to be fully resolved especially with regards to appropriate levels of nutrients, stability of fortificant, nutrient interactions, physical erties and acceptability by consumers (WHO/FAO, 2006). Wouldwide, more than 600 million metric tons of wheat and maize flours are milled annually by commercial ruller mills and consumed as non-files, breads, pasta, and other flour products by people in many countries. Furtification of industrially processed wheat and maize flour, when appropriately implemented, is an effective, simple, and inexpensive strategy for supplying vitamins and minerals to the diets of large segments of the world's population. It is estimated that the proportion of industrial-scale wheat flour being furtified is 97% in the Americas, 31% in Africa, 44% in Eastern Welliterranean, 21% in South-East Asia, 6% in Europe, and 4% in the Western Pacific regions in 2007 (FFI, 2008).

#### E FFI SECOND TECHNICAL WORKSHOP ON WHEAT FLOUR FORTIFICATION

Nearly 100 leading autrition, pharmaceutical and cereal scientists and milling experts from the public and private sectors from around the world met on March 38 to April 3, 2008 in Stone Mountain, GA, USA to provide advice for countries considering national wheat and/or make flour furtification. This Second Technical Workshop on Wheat Flour Fortification: Practical Recommanda tions for National Application was a follow up to a FFL the US Centers for Diseasa Control and Inevention (CDC) and the Mexican Institute of Public Health, first technical workshop emitted "Wheat Roor Fortification: Current Knowledge and Practical Applications," held in Commany.ca, Mexico in December 2004 (FF) 2004). The purpose of this second workshop was to provide quidance on national for lifeation of wheat and maize flours, milled in industrial roller mills (i.e. >20 metric tons/day milling capacity), with iron, zinc, folic acid, vitamin B\_and vitamin A and to develop quidelines on formulations of premix based on common ranges of flour consumption. A secondary aim was to agree on the best practices quidelines for premix manufactures and millers. Expertwork groups prepared technical documents reviewing published efficacy and effectiveness studies as well as the form and levels of fortificants currently being added to flour in different countries. The full reviews will be published in a supplement of Food and Nutrition Bullatin in 2009 and the summary recammends tions of this meeting can be found in http://www.sph.enury.edu/wheatflour atlanta06/ (FFL, 2006).

#### RECOMMENDATIONS FOR WHEAT AND MAIZE FLOUR FORTIFICATION

When and make floar fortification is a preventive final-based approach to improve microantifiest status af populations over time that can be integrated with cher interconnects in the effects to tracket within and microal decision decision in the effects to tracket and the status of the status of the propriose foodwhile with the same and off or elements in the status of a status of the status of the status of the status of the propriose foodwhile produced the strengthed mosame the propriose foodwhile induced based on the footwhile the status of status of the status of statu