

From 2005-2011, the A2Z project has focused on developing the capacity of governments, the food industry, and regional institutions in Africa, Asia, and Latin America to implement mass food fortification programs that address the reduction of micronutrient malnutrition in the population. In collaboration with governments and in-country nutrition experts, the tools that were developed represent the practice and on-the-ground experience gained from the implementation of activities in developing countries. Specifically, the technical reference resources support the setting of national standards and regulations for fortified foods, methods for supervision, inspection and sampling for laboratory analysis, external and internal monitoring methods to enforce standards of micronutrient quality and safety specifications, and building the capacity of food inspectors to ensure compliance with regulations.

The food fortification tools selected for inclusion in the A2Z Global Toolkit showcase the experience of governments, food industry, laboratories, and local institutions in the East, Central and Southern African countries and Palestine.

## TOOLS

- 3.1 **The Food Fortification Formulator: Technical Determination of Fortification Levels and Standards for Mass Fortification**
- 3.2 **Manual of Methods for Determining Micronutrients in Fortified Foods**
- 3.3 **Food Control Manuals**
- 3.4 **Inspection Manual for Monitoring Salt and Flour Fortification**

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### 3.1 **The Food Fortification Formulator: Technical Determination of Fortification Levels and Standards for Mass Fortification**

A unique tool for calculating the complex aspects of the use of micronutrients such as the potential nutritional benefits of foods, fortification formulas, selecting appropriate fortificant levels to enforce regulations, costs, and design of premixes. An accompanying guide provides background information on mass food fortification to meet public health goals and extensive instructions for entering data into fifteen worksheets.

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### 3.2 **Manual of Methods for Determining Micronutrients in Fortified Foods**

Developed for use by the Palestinian Ministry of Health, this manual presents a systematic set of methods applied in the Central Public Health Laboratory for the analysis of wheat flour primarily but which can also be applied to bread, cereals, milk and edible oil. Detailed step-by-step instructions are included for inspection and sampling of fortified foods that enable the Ministry of Health to verify compliance with the national standard specifications.

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### 3.3 **Food Control Manuals**

A comprehensive set of thirteen food control manuals present standardized procedures for the external and internal monitoring of fortified flours, oil, salt, and sugar in East, Central, and Southern African countries. The in-depth, step-by-step procedures provide technical reference resources for government food inspectors to build their capacity to enforce standards of micronutrient quality and safety specifications for fortified foods at a country level.

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### 3.4 **Inspection Manual for Monitoring Salt and Flour Fortification**

Developed by the Environmental Health Department of the Palestine Ministry of Health, this manual supports the building of capacity of government food inspectors in the technical supervision and inspection of fortified foods to ensure compliance with standard national regulations in wheat flour mills as well as commercial retail stores selling wheat products.

## 3.1 The Food Fortification Formulator: Technical Determination of Fortification Levels and Standards for Mass Fortification

### PURPOSE:

The Food Fortification Formulator (FFF) is a unique tool that can be used to maximize the health benefits and minimize the potential risks associated with mass fortification of foods. The tool assists in calculating various aspects related to the use of micronutrients: potential nutritional benefits, appropriate levels to enforce regulations, costs, and design of premixes.

### DESCRIPTION:

Conceptualized and designed by Omar Dary, Food Fortification Specialist of A2Z, the FFF is comprised of spreadsheets for fortifying eight foods: High Extraction Wheat Flour, Maize Masa Flour, Maize Flour (no germ), Whole Maize, Sugar, Salt, Oil (spreadsheets for rice and milk are being validated). The detailed spreadsheets contain fortification formulas that can be adjusted to different food consumption patterns and customized to a country's specific conditions and needs. Dietary parameters for gender and different age groups, price of commonly used fortificants, and the usual stability of micronutrients during production, distribution, and marketing are also included. An accompanying guide provides background information on mass food fortification to meet public health goals, extensive instructions for entering data into the 15 worksheets, and interpretation of the results of calculations.

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**JOB AIDS:**

None

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**INTENDED USERS:**

A wide range of groups interested in the mass fortification of foods to improve the health of populations and reduce micronutrient deficiency: food industry, government institutions and officials, international health and development agencies, academic and research institutions.

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**IMPLEMENTED IN:**

Uganda, Kenya, Malawi to enact standards and design food control procedures, and in Chile to evaluate the wheat flour fortification program and identify discrepancies between the national standards and its application by the industry and government officials.

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**BENEFITS:**

The FFF is a comprehensive tool that can be used by developing countries to set national standards and regulations for food fortification programs, and evaluate implementation and compliance by government officials and the food industry.

The spreadsheets are designed with detailed instructions, notes, and in-built formulae so that the necessary calculations can be accomplished.

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**LANGUAGE:**

English, Spanish

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**GO TO RESOURCE:**

<http://www.a2zproject.org/node/49>

### PURPOSE:

This manual was developed for use by the Palestinian Ministry of Health-Central Public Health Laboratory to strengthen the supervisory monitoring system of the national food fortification program. It presents the methods applied in the Central Public Health Laboratory for the analysis of wheat flour mainly but which can also be applied to bread and other fortified foods such as cereal-based products, milk and edible oil. Inspection and sampling enables the Ministry of Health to verify compliance with the national standard of requirements for fortified foods.

### DESCRIPTION:

The Palestinian Wheat Flour Fortification Standard issued in 2005 establishes that wheat flour must be fortified with 10 minerals and vitamins - iron, zinc, vitamin A, vitamin D, thiamin (B1), riboflavin (B2), niacin (B3), pyridoxine (B6), folic acid (B9) and vitamin B12 (compared to only 5 in other countries). Developed collaboratively by the Palestine Ministry of Health and the A2Z project, the manual, supported by in-country practical experience, provides systematic laboratory methods to test for iron and Vitamin A in wheat flour and water-soluble vitamins such as riboflavin, thiamin, niacin, and folic acid in fortified foods and flours. Although vitamin analysis is not applied routinely due to the cost, it may be applied periodically to random samples. Qualitative methods (spot test for added iron) and quantitative spectrophotometric and high performance liquid chromatography are presented in detailed step-by-step instructions plus lists of equipment, reagents, and solutions. Images and interpretation of results also provide guidance to the user.

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**JOB AIDS:**

None

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**INTENDED USERS:**

Governments seeking to establish national fortified food inspection guidelines and sampling methodologies for central public health laboratories.

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**DEVELOPED BY:**

Palestine Ministry of Health and A2Z, 2010

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**IMPLEMENTED IN:**

West Bank, Palestine

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**BENEFITS:**

The manual presents a comprehensive set of laboratory methods for determining micronutrients in fortified foods and can be adopted/adapted by governments.

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**LANGUAGE:**

English, Spanish

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**GO TO RESOURCE:**

<http://www.a2zproject.org/node/49>

### PURPOSE:

This set of Food Control Manuals was developed to provide technical reference resources for government food inspectors to enforce standards of micronutrient quality and safety specifications for fortified foods at a country level. From 2005-2011, the A2Z project has been engaged in advocacy and technical assistance for food fortification initiatives at a regional level in East, Central, and Southern African (ECSA) countries to build the capacity of governments and food industry staff to reduce micronutrient malnutrition in their populations.

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### DESCRIPTION:

In a collaborative initiative between the ECSA Health Secretariat and A2Z, a comprehensive set of 13 manuals was developed that lay out standardized procedures for the external and internal monitoring of fortified flours, oil, salt, and sugar. With an emphasis on developing country settings, the manuals are based on practical experience and co-authored by in-country food fortification experts. Four manuals address the external monitoring aspects of planning inspection visits, technical auditing and inspection visits, and inspection by corroborating trials for fortified maize flour, wheat flour, sugar and oil. Six manuals cover quality assurance and quality control methods for premixes of fortified maize flour, wheat flour, sugar, oil. The final three manuals focus on cost effective laboratory test methods (qualitative, semi-quantitative, and quantitative) for determining the presence and content of common indicator micronutrients such as Vitamin A, riboflavin, iron, and iodine in fortified foods. All the manuals present detailed step-by-step instructions with numerous templates for forms, reports, checklists, inventory and production control logs, and laboratory tests.

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**JOB AIDS:**

None

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**INTENDED USERS:**

The Food Control Manuals can be used by developing country governments and food industry to build capacity/improve their current supervision and inspection of fortified foods to enforce regulations and/or initiate activities in this area; NGOs working with governments on food fortification programs.

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**DEVELOPED BY:**

East, Central, and Southern African Health Community and A2Z Project, 2007

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**ADAPTED AND ADOPTED IN:**

Uganda, Malawi, Kenya

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**BENEFITS:**

The set of 13 food control manuals, with clear, step-by-step guidance, provides a comprehensive group of technical resources that can be adopted and adapted by governments to build capacity to ensure compliance with national micronutrient food fortification technical specifications.

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**LANGUAGE:**

English, Spanish

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**GO TO RESOURCE:**

<http://www.a2zproject.org/node/49>

### PURPOSE:

The Inspection Manual was developed to build the capacity of government food inspectors in Palestine in the technical supervision and inspection of fortified foods in wheat flour mills and commercial retail stores selling wheat products to ensure compliance with standard national regulations.

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### DESCRIPTION:

Developed in joint effort between the Environmental Health Department of the Ministry of Health/Palestine Authority and A2Z, the Inspection Manual is an essential component of the government strategy to increase the provision of essential micronutrients in the diet of the population. The manual, specifically developed for a developing country environment, is based on experience in Palestine. Comprised of two sections, the manual lays out a comprehensive approach for the technical audit in both wheat flour mill factories and in commercial retail, wholesale and bakeries. In the wheat flour mills, food inspectors verify the performance of quality assurance and quality control activities undertaken by the producer. Random samples are collected and sent to the central laboratory for analysis for corroboration with the national technical specifications for micronutrient additions to wheat flour. Similar inspections with sampling of salt, sugar, flour and oil are conducted at commercial outlets. Detailed step-by-step procedures with the appropriate forms for data collection and reports are included in the manual.

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**JOB AIDS:**

None

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**INTENDED USERS:**

The Inspection Manual can be used by developing country governments and food industry to build capacity/improve their current supervision and inspection of fortified foods to enforce regulations and/or initiate activities in this area; NGOs working with governments on food fortification programs.

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**DEVELOPED BY:**

East, Central, and Southern African Health Community and A2Z Project, 2007

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**IMPLEMENTED IN:**

West Bank, Palestine

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**BENEFITS:**

The clear presentation and detailed sequence of procedures in the Inspection Manual can be adopted and adapted by governments to build the capacity of food inspectors to ensure compliance with national micronutrient food fortification technical specifications.

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**LANGUAGE:**

English

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**GO TO RESOURCE:**

<http://www.a2zproject.org/node/49>

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