Food Processing and Quality Control

Technical Meeting on Food Procurement

Rome – Italy
28-30 May, 2007
Food processing

“Food Processing is the conversion of agricultural products to substances which have particular textural, sensory and nutritional properties using a set of methods and techniques called food processes”
Processed Foods WFP Buys

- **Products**: flours, fortified blended foods, biscuits and energetic bars, ready-to-use therapeutic foods, oils, noodles, canned foods, salt, sugar …

- **Product transformation**: to convert to edible products, to preserve, to extend shelf-life, to enhance the nutritive value, to delay or prevent biochemical, chemical and physio-chemical undesirable changes, to modify techno-functional properties, to improve Quality

- **Nutritional and health value of WFP products**: energy, macro & micro-nutrient content, nutrient bio-availability, digestibility, nutrient availability at beneficiary level, allergicity, health allegations (prebiotics), non-toxicity

- **Other characteristics**: safe, well packaged, easy to transport and to store and to trace, cost-effective, versatile, easy to prepare, enabling fuel saving, culturally acceptable, and enabling easy targeting
Food processing: WFP’s areas of intervention:

1. Local production
2. Feasibility study
3. Factory inspection
4. Food fortification process
5. Quality assurance
6. Specification improvement
   - Increased shelf-life, less leaking, less losses, better nutritional quality, better digestibility, better suitability for specific population (HIV/AIDS patients, children under 2) …
1- Local production: Trends 2001 - 2006

Biscuits production:
• Total: 95,394 MT
• US$: 80.4 M

FBF production:
• Total: 810,010 MT
• US$: 285,698 M
1- Local production: and after?

- **Nepal**: commercial product / social marketing
- **Laos**: 150,000 refugees fed with a rice-based formula (Non WFP project)
- **India**: 4 States are producing FBF (based on local raw ingredients) since early 90s. 2006 production: 44,000 MT
- **Vietnam**: 2 units produce for local government and local market since 1998
2- Feasibility studies

- Laos, Timor Leste, Cameroon, Afghanistan, Guatemala, Cuba ..
  - Timor Leste: too expensive (CSB)
  - Cameroon: 2006 (maize meal)
  - Laos: 2006 (CSB)
  - Guatemala: 2007 (Corn Milk Blend)
  - Cuba: 2007 (CSB)
  - Afghanistan: 2008 (Biscuits)

Closer to beneficiaries, less storage, better pipeline, less losses, decrease food insecurity in the area of production, use local resources (agricultural and human), benefit to local development, formula adapted to the specific needs and tastes of the recipients
3- Factory inspections

- Nepal, India, Indonesia, Bangladesh, USA …
  - Recommendations for improvement e.g. better hygiene, safety, mineral and vitamin mixing, etc.
  - “Green CSB” lessons learnt
  - Standard Operating Procedures for new factories
  - Headquarter initiative with European producers

Better product quality, less losses, less ‘recall’, screening of factories
4- Food fortification process

- Indonesia, Bangladesh, India …
  - Wheat flour fortification in Gujarat State: 500 mills in one district
  - Cameroon maize meal fortification in vitamins & minerals
  - Biscuit, noodle, whole wheat flour, and fortified blended food studies: better knowledge of micronutrient losses during processing
  - Shelf-life studies: better knowledge of micronutrient retention during storage (e.g. 50% of Vit A lost after 6 months storage of CSB.)

Main goal: to deliver a more nutritious product to our recipients.
5- GMP-HACCP programme in Africa (Quality Assurance)

Example of CSB

RSA: 5,800 MT/mo [4 units]

Handbook GMP & HACCP principles

First formal visit of CSB factory

Zimbabwe: 3,500 mt/mo [4 units]
Malawi: 3,750 mt/mo [4 units]
Zambia: 1,800 mt/mo [3 units]

Second formal visit of CSB factory

First formal visit of CSB factory

Jan, 2005

Second formal visit of CSB factory

Dec, 2004

On going

Nov, 2004

Apr, 2005
5- GMP-HACCP programme results

- Presenting practical guidelines for improving product quality and reducing the risk of problems on CSB, MML manufacture for WFP (i.e. safety, hygiene, mineral & vitamin mixes, etc.)
- Promoting best practice by the processors
- Improving working conditions for factory staff
- Stimulating critical thinking and analysis for factory managers
- Supporting governments in the application of national food legislation
- Having a knock-on effect of quality improvements of CSB & MML manufactured for NGOs or the commercial sector, or other foods manufactured by the processor

- Cost: US$ 55,000 for CSB project, US$ 70,000 for MML project
- Cost/MT: < US$ 0.8/MT
- Savings mainly by reducing “costs of non-quality” (e.g. less losses, re-conditioning, product recalls, claims, insurance fees…)
Food processing: WFP’s current policy and new activities

- 2004: EB approved policy on Micronutrient Fortification: WFP experiences and ways forward
- 2005: meeting on improvement of WFP’s Fortified Blended Foods.
- 2006: EB Paper on “Food Procurement in Developing Countries”
- 2006 – 2007: SUSTAIN project to improve US CSB formulation, in collaboration with WFP
- 2006: Kemin study on fortified biscuits and CSB
- 2007: collaboration with UNILEVER, DSM, SUSTAIN, and FANTA to develop a new formula for 6-24 month old children
"Quality control (QC) is not an optional extra in the food sector, neither is it something that is only done by large manufacturers. It is an essential component of any food business. The purposes of quality control are:

- To protect the beneficiaries from dangers (e.g. contaminated foods) and ensure that they get the weight and quality of food that they are entitled to.

- To protect WFP from cheating by suppliers, below standard food deliveries (e.g. infested commodity) and false accusations by transporters, beneficiaries or suppliers.

- To be sure that food laws operating in a country (origin or recipient) are complied with.

- To be more transparent vis-à-vis our donors."
QC for the beneficiaries

What do they need?

- Even in emergency situations, food should not only be thought of in terms of quantity, but it should also encompass
  - quality,
  - safety,
  - diversity,
  - practicality,
  - value for “money”,
  - etc.
QC for WFP

- QC to improve our efficiency,
- QC to increase the sustainability of our investment (in equipment as well as in human capital),
- QC can be used as a capacity building tool (for internal purposes as well as for our partners)
- QC promotes compliance with national and cross border food legislation
- QC is not time consuming, and is not expensive
- QC helps to save money in the long run (e.g. US$ 5,000,000 saved in the last 2.5 years)

QC helps to predict and control the quality of the foods, avoiding having to manage problems as they arise.
QC for our cooperating partners

- QC as a capacity building tool
- QC to improve feedback, and to develop interactive and constructive dialogue
- QC to anticipate possible problems
- QC integrated into the local set-up (and not superimposing a new system to an existing one)

Ideally in the future, part of the risks and the investments will be shared with our partners.
QC for the donors

Return on Investment:

- A better system to enable better fund management (less losses, less recalls, etc.)
- Better external visibility, better image, more transparency

QC should be integrated throughout the whole WFP supply chain – i.e. traceability and quality from supplier (included donated foods) to beneficiary
Objectives of a QC system

- Prevention of foodborne illness
- More efficient quality assurance system
- Reduced costs of food analyses
- Reduced losses related to product recall
- Protection of WFP & Donors reputation
- Reduced costs of food analyses
Recommendations on QC

- WFP’s food quality can NOT only be subcontracted. Most inspection companies and consultants do not take into account WFP’s specificity (e.g. regulations, organizational constraints, …)

- Implementation of a ‘common’ quality system is not a costly gadget – it is a necessary tool to enhance internal efficiency, and better serve our beneficiaries.
Next steps: traceability and quality control

- Nest immediate steps:
  - RFID: Radio Frequency Identification (to further decrease losses)
  - HACCP: at warehouse level
  - Website: [http://foodquality.wfp.org](http://foodquality.wfp.org)
  - Loss control database: to know what is the main cause of our losses then to prioritize actions to act to mitigate them
  - Training module: on food quality management
  - To pursue collaboration with KEMIN to further improve our product quality and specifications
Future challenges:

- New food rules and regulations (i.e. local & international)
- New (processing, analytical, etc) technologies
- New products, packaging, etc.

WFP must anticipate, not suffer the consequences of these changes
WFP should keep up with innovations
Questions?

Grazie mille