# GUIDE TO GOOD PRACTICES

## FOR

## PEANUT PROCESSING



Prepared by two women's associations

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Project











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Meds & Food For Kids

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Recommendations on proper processing practices, outlined in this guide, apply not only to peanut butter, but also to all products containing peanuts, karapinya, chanmcham, grilled peanuts or others.

# 1. Description and intended usage of the product



PRODUCT NAME peanut butter



STORAGE CONDITIONS best stored below 28°C



PACKAGING plastic jar with unsealed lid



PEANUT BUTTER containing salt and other spices



SHELF LIFE 5 months



CLIENT SPECIFICATIONS smooth and creamy paste, without unpleasant odor

#### **INTENDED USERS**

whole family, especially young children



## 2. Aflatoxins in peanuts

## 2.1 Aflatoxins in peanuts

Aflatoxins are toxic chemical substances produced by molds called *Aspergillus*. These microscopic fungi (or molds) are widespread in tropical regions and can attack a variety of crops, including maize, sorghum and peanuts.



Microscopic view of *Aspergillus* 

Crop damage by Aspergillus can be worse during drought or when yields exceed the capacity of local post-harvest drying and storage infrastructure.

analysis.



DROUGHT

bic infrastructure.

Aflatoxins do not alter the taste or appearance of food and can only be determined by chemical

Presence of *Aspergillus* mold on peanuts can sometimes be detected, appearing as a yellow or green powdery deposit.



2.2. Why is it important to control aflatoxins ?

Aflatoxins are potent carcinogens and a chronic exposure causes liver cancer. The consumption of highly contaminated food can cause acute aflatoxicosis which is often fatal.

Consumption of products contaminated with aflatoxins is also linked to growth delay in children.

## Aflatoxins cause growth delay in children



Aflatoxin contamination can occur at several stages along the production chain. In Haiti, peanut butter production is a very profitable activity for women and women's associations. Unfortunately, many studies have identified high levels of aflatoxins in locally grown peanuts or in peanut-based products.

## 3. Steps in the manufacturing of peanut butter





## 4. Risk analysis for aflatoxin contamination

## STEP 1 Loc

# Look for aflatoxins in peanut lots before purchasing or upon arrival to the facilities





No risk

# 5. Defining a plan for good hygiene practices in peanut butter processing

Good hygiene practices encompass all of the rules and regulations required in a food processing plant to insure food safety requirements. A company must establish good hygiene practices before starting production.

# **STEP 1** Search for aflatoxin in lots of peanuts before purchase or upon arrival

Make sure that the peanuts are of good quality upon their arrival. This step represents a critical point, because if the peanuts are of lesser quality, so will be the final product.

If laboratory analysis services for aflatoxins are available, select a sample of peanuts for testing.



## Immunochromatography test results for the detection of aflatoxins

- A Only one visible line indicates too high of an aflatoxin content (over 20 ppb).
- B Two visible lines indicates an aflatoxin content within an acceptable range (less than 20 ppb).
- C The lack of visible lines indicates an invalid test.

If aflatoxin screening services are not available, aflatoxin levels can be reduced by conducting visual inspections of each peanut lot.

Select 100 kernels and count the number that are damaged. If the number of damaged kernels is higher than 20, the peanut lot must be rejected.



## **STEP 2**

### Sorting before shelling

Sorting is done to remove all damaged peanuts from the lot : moldy peanuts, discolored, immature, rotten, empty pods, kernels that are broken, sprouted or presenting any other defect.



Sorting the lot also removes possible foreign objects (stones, wood fragments, ...).

This procedure can reduce the aflatoxin content of the peanuts. This step should always be done in a well-ventilated area, since moldy peanuts can release particles which, when inhaled, can be harmful to health.



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## **STEP 3** Warehousing at the facilities (if applicable)

## Take all necessary precautions for a successful warehousing :



chemicals in the room.



## STEPS 4 and 5

# Shelling and sorting after shelling

The shelling of peanuts is the act of removing the peanut pods in order to obtain the peanut kernels. This can be done by hand or with a machine.

#### **BY HAND**

By hand, shelling is done by pressing the pod between the thumb and index fingers or by hitting the extremity of the pod against a hard surface to break the pod and extract the kernels.



This method has the advantage of producing a lot of clean and intact kernels. It also allows to simultaneously perform both shelling and sorting steps.

Sorting is extremely important. Indeed, manual sorting can reduce the concentration of aflatoxins in the peanut lot.

#### **BY MACHINE**

When shelling with a machine, care must be taken to reduce the amount of broken kernels in order to obtain a maximum amount of whole shelled kernels.



The shelling step is followed by a sorting step to remove the bad peanuts (kernels that are deformed, discolored, broken or damaged by insects). Bad peanuts should be buried or burned.

Many studies have shown that manual sorting of peanuts can reduce the aflatoxin content in a peanut lot.

Sorting must always be performed in a well-ventilated area.



#### STEP 8

#### Sorting after roasting

The aim of this operation is to remove burnt or discolored kernels, which have a detrimental impact on the quality of the peanut butter and are more likely to containg high levels of aflatoxins.

This new sorting step represents the last opportunity to remove kernels that are deformed or damaged and, at the same time, to reduce the aflatoxin content of the final product.



## STEPS 9, 10, 11 and 12

# Grinding and conditioning

Individuals participating in these steps should wear gloves, masks, hats, aprons and be free of any contagious disease.

The quality of grinding and of packaging depends on good hygiene practices. Grinding, which transforms the kernels into a paste, will distribute the aflatoxins in the final product, but without reducing the total amount. If the bad kernels are not removed (see page 12, step 8), all the peanut butter produced after grinding may be contaminated.



## Sterilization

Grinding, conditioning and packaging steps must be completed in accordance with hygiene standards and principles.

The grinder, jars and other utensils used must be clean and sterilized.



#### Conditioning

Add spices, such as : sugar, salt, peppers, cinnamon, ginger.



Packaging



Let the peanut butter rest covered.Prepare the jars.

Manufacturing

of the paste



## 6. Monitoring of the good hygiene practices

#### **Transformation process**



Make sure that good practices are followed at every step of the transformation process.

Pay special attention to critical steps in the process.

# Control of the transformation process



are noted in a log book.

See model next page

IF NECESSARY Revise the transformation process or this guide



## Maintain a log book

Compliance with the good practices is verified at each stage of the transformation process. A log book is used to summarize pre-identified checkpoints in the manufacturing process. Continuous upkeep of this log can help identify any deviation to good hygiene practices and apply the necessary fixes to remedy these deviations.

## Log book

ORGANISATION :		YEAF	R: MO	ONTH :
DATA MONITORING	LOT 1	LOT 2	LOT 3	LOT 4
NAME OF PRODUCER				
NAME OF BUYER				
QUANTITY OF PEANUTS				
HUMIDITY LEVEL				
RESULT OF AFLATOXIN TEST				
PRICE IN HGT				
1ST SORTING	YES NO	YES NO	YES NO	YES NO
DATE OF STORAGE ENTRY				
DATE OF STORAGE EXIT				
2ND SORTING	YES NO	YES NO	YES NO	YES NO
DATE OF ROASTING				
BLANCHING (Initials of person mandated to this step)				
3RD SORTING	YES NO	YES NO	YES NO	YES NO
ADDED INGREDIENTS AND QUANTITIES				
DATE OF PACKAGING				
SIGNATURE OF SUPERVISOR				

This table can be adapted and reproduced for regular use.

## 7. Peanut butter is good for us !

Haitian peanut butter is one of the best in the world. Carefully prepared, it has a smooth and creamy texture with a rich and delicate taste, enhanced by spices, which give it its unique character.

The peanut plant is related to beans, cowpea and other crops of the legume family. Peanut cultivation originated in the north of Argentina and the south of Bolivia, more than 8 000 years ago.

Peanut is one of the most ancient crops of Haiti and was already grown by the first peoples of Hispaniola at the time of European contact in the late fifteenth century.

In Haiti, peanut is processed to obtain manba and a variety of other products such as chanmchanm (a mix of peanut and maize reduced to powder) and a variety of sweets such as karapinya, douce or tablette. It is also eaten grilled and salted. A high quality oil can be extracted from peanuts, while the peanut cake can be used for animal feed.

Peanuts are used in the production of therapeutic food, useful for the treatment of acute malnutrition. In Haiti, MFK and other organisations dedicate themselves to the production of therapeutic food. Peanut butter has long been appreciated by the whole family at breakfast. Thanks to its excellent nutritional quality, it represents a staple element of traditional Haitian food and contributes to a balanced diet for children and adults alike. Its high protein, fat and fiber content make it a nutrient-dense food of excellent nutritional quality.

## Peanut butter possesses many other virtues.

- It contains an antioxidant as well as vitamins E and B3, which reinforce and protect our cells.
- Peanut butter is a excellent source of important minerals for our health, including manganese and copper.



At the market, offer a savory peanut butter with excellent nutritional value and prepared according to good hygiene practices.

## Associations that have initiated this Guide

When well prepared, Haitian peanut butter is a healthy and nourishing product. However, many studies have shown that the peanut butter found in Haitian markets could contain toxic substances produced by fungi, called aflatoxins. This problem also exists in several other countries, which have implemented quality standards for the content of aflatoxins in peanut butter and encourage farmers and processors to use good production practices. The *Meds & Food for Kids* (MFK) company, in collaboration with the AFLAH project established by *Laval University* with support from the *International Development Research Center* (IDRC), collaborated with two women associations, RAFAVAL and AFO, to develop and apply good production practices aimed to limit the aflatoxin content in peanut butter.

Rasanbleman Fanm Vanyan Limonad (RAFAVAL) is a women's association established in 2002 in Limonade, in the North department of Haiti. This association brings together over 100 active members and over 500 women in total. It ensures awareness and education in order to improve the living conditions of its members and support the women of the commune who are victims of domestic violence. RAFAVAL has a facility for the processing of fruits, cocoa and peanuts. Roughly 50 women participate each week in the purchasing of raw goods, as well as in the manufacturing and selling of the products. Thanks to the resulting profits, the association is able to maintain its activities while helping members in financial difficulties.

The Women's association of Ouanaminthe (AFO by its French acronym) was founded on September 11, 2010, in Ouanaminthe, in the North-East department of Haiti. Including approximately 70 active members, its mission is to change the working and life conditions of women by striving for equality. AFO carries out awareness campaigns, notably to prevent premature pregnancies, and offers training on gender-based violence. AFO supports women who want access to vocational training or wish to launch income-generating activities. AFO is also dedicated to the processing of fruits, cocoa and peanuts thanks to its facilities refurbished under the RESEPAG project.





#### THE HAITI BUREAU OF STANDARDS

Established in December 2012, *The Haiti Bureau of Standards* (BHN by its French acronym) is a public body overseen by the Ministry for Trade and Industry. Its mission is to organize and manage activities related to standardization, certifications, industrial metrology and promotion of quality, while offering technical support to all initiatives aimed at realizing these goals.

BHN supports economic, social and environmental development of the country by establishing a quality verification and measurement system, which provides economic operators with the necessary support to maintain and improve the quality of their products.

BHN established a task force on aflatoxins, mandated to identify and promote methods to combat aflatoxin contamination. Through this task force, the BHN is pleased to be associated to the production and distribution of this *Guide to good practices for peanut processing*. It hopes that those to whom this guide is intended will find here a source of recommendations and useful advice conducive to obtaining food of excellent sanitary quality and nutritional value.



