



THAI AGRICULTURAL STANDARD

TAS 4901-2012

**GOOD MANUFACTURING PRACTICES FOR
PEANUT SHELLING PLANT**

**National Bureau of Agricultural Commodity and Food Standards
Ministry of Agriculture and Cooperatives**

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PEANUT SHELLING PLANT**

National Bureau of Agricultural Commodity and Food Standards

Ministry of Agriculture and Cooperatives

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Technical Committee on the Elaboration of Thai Agricultural Standard for Good Manufacturing Practices for Peanut Shelling Plant

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Peanut is a potential agricultural commodity produced in Thailand. The operational control at the shelling plant is one of the crucial steps along the supply chain. In order to minimise the risk of aflatoxin contamination , the Agricultural Standards Committee deems it necessary to establish an agricultural standard on Good Manufacturing Practices for Peanut Shelling Plant.

This standard is based on the information of the following documents:

CAC/RCP 1, Rev. 4-2003. General Principles of Food Hygiene. Joint FAO/WHO Food Standard Programme, FAO, Rome.

CAC/RCP 55-2004. Aflatoxin Contamination in Peanuts. Joint FAO/WHO Food Standard Programme, FAO, Rome.



NOTIFICATION OF THE MINISTRY OF AGRICULTURE AND COOPERATIVES
SUBJECT: THAI AGRICULTURAL STANDARD:
GOOD MANUFACTURING PRACTICES FOR PEANUT SHELLING PLANT
UNDER THE AGRICULTURAL STANDARDS ACT B.E. 2551 (2008)

Whereas the Agricultural Standards Committee deems it necessary to establish an agricultural standard on Good Manufacturing Practices for Peanut Shelling Plant as a voluntary standard in accordance with the Agricultural Standards Act B.E. 2551 (2008) to promote such agricultural commodity to meet its standard on quality and safety.

By virtue of Section 5, Section 15 and Section 16 of the Agricultural Standards Act B.E. 2551(2008), the Minister of Agriculture and Cooperatives hereby issues this Notification on the Establishment of Agricultural Standard: Good Manufacturing Practices for Peanut Shelling Plant (TAS 4901-2012) as a voluntary standard, details of which are attached herewith.

Notified on 24 September B.E. 2555 (2012)

(Mr. Theera Wongsamut)
Minister of Agriculture and Cooperatives

THAI AGRICULTURAL STANDARD

GOOD MANUFACTURING PRACTICES FOR PEANUT SHELLING PLANT

1. SCOPE

1.1 This agricultural standard establishes good manufacturing practices for a peanut shelling plant in every step (Appendix A) from raw material receiving, conditioning, storage prior to shelling, shelling, kernel sizing, sorting, packing, storage, and transportation to ensure the quality and safety product suitable as raw materials in processing for consumption by taking into account the environment, health and safety of workers.

1.2 This standard shall be used in conjunction with the Thai Agricultural Standards on Dried Peanut (TAS 4700) and Good Agricultural Practices for Peanut (TAS 4900).

2. DEFINITIONS

For the purpose of this standard:

2.1 Peanut shelling plant means any premise in which activities or post harvest handlings of peanuts starting from raw material receiving to shelling are practiced, including the premises which receive peanut kernels for sorting.

2.2 Peanut raw material means fresh in-pod peanuts, dried in-pod peanuts or peanut kernels, wherever the case may be.

2.3 Fresh in-pod (in-shell) peanut means a fully mature peanut pod that has been stripped from the plant but has not yet been dried. It normally contains 45-60% moisture.

2.4 Dried in-pod (in-shell) peanut means a stripped peanut pod that has been sun-dried or dried by using a dryer.

2.5 Peanut kernel means a kernel obtained after the dried pod has been shelled.

2.6 Conditioning means processes of drying, cleaning and sorting.

2.7 Lot means a quantity of peanuts delivered at one time and produced from the same period of the shelling plant. The sampling officer knows or presumes that the lot has the same production origin, producer, variety, packer, type of packaging, or marking.

2.8 Visual inspection means an inspection of external appearances of an entity such as a produce, product or apparent environment condition. This is basically examined by eyes but other sensory evaluation may be applied depending on the quality factors to be inspected. Additional tools such as a magnifying glass could also be used. Inspection of working operation is also included.

2.9 Aflatoxin means a toxic secondary metabolite produced by some fungi, especially *Aspergillus flavus* and *Aspergillus parasiticus*. Those commonly found in nature are B1, B2, G1 and G2 aflatoxins.

3. REQUIREMENTS AND INSPECTION METHODS

Requirements and inspection methods are as in Table 1.

Table 1 Requirements and Inspection Methods
(Section 3)

Items	Requirements	Inspection Methods
1. Establishment 1.1 Location	1.1. The establishment shall be located in the environment that poses no risk of contamination to peanuts	1.1 Visual inspection of the environment.
1.2 Raw material receiving and cleaning areas	1.2.1 The area shall be separated from the other working areas.	1.2.1 Visual inspection of the raw material receiving and cleaning areas.
	1.2.2 In case no water cleaning process, such area shall be distant from the cleaned peanut area.	1.2.2 Visual inspection of the raw material receiving and cleaning areas.
	1.2.3 In case water is used, such area shall be separated from the dried peanut area.	1.2.3 Visual inspection of the raw material receiving and cleaning areas.
1.3 Drying area	1.3.1 The area shall be clean, no waterlogging, and free from rubbish.	1.3.1 Inspect the working area.
	1.3.2 Measure to prevent contamination from disease carrier animals or pets shall be in place.	1.3.2 Inspect the working area and the preventive measure
1.4 Storage of peanut raw material	1.4.1 The storage shall be clean and able to prevent contamination from disease carrier animals or pets that may cause hazards to consumers.	1.4.1 Inspect the peanut raw material storage.

Items	Requirements	Inspection Methods
	1.4.2 The storage shall be provided with good air flow and not have any leakage on the wall or roof.	1.4.2 Inspect the peanut raw material storage.
	1.4.3 The storage shall be able to prevent the dried in-pod peanuts from moisture buildup.	1.4.3 Inspect the peanut raw material storage.
1.5 Shelling area	1.5.1 Measure to prevent contamination from disease carrier animals and pets shall be in place.	1.5.1 Inspect the working area.
	1.5.2 Measure to prevent and reduce dust from operation shall be in place.	1.5.2 Inspect the environment of the shelling area and the preventive measure.
1.6 Kernel sorting area	1.6.1 The area shall be able to prevent cross contamination.	1.6.1 Inspect the working area.
	1.6.2 Measure to prevent contamination from disease carrier animals and pets shall be in place.	1.6.2 Inspect the working area.
	1.6.3 The area shall be provided with sufficient lighting for operation.	1.6.3 Check the light intensity and/or inspect the working area.
	1.6.4 Measure to prevent kernels from dampness shall be in place.	1.6.4 Check the preventive measure.
1.7 Storage of peanut kernel and packaging material	1.7.1 The storage shall be clean and able to prevent contamination from disease carrier animals or pets that may cause hazards to consumers.	1.7.1 Inspect the storage.
	1.7.2 Measure to control and prevent the kernels from moisture buildup shall be in place.	1.7.2 Check the measure to prevent moisture buildup.
1.8 Machines, equipment, and tools	1.8.1 Machines, equipment, and tools whether or not in direct contact with the peanut raw materials and products shall be suitable for the operation, easy to maintain, clean, and not easily cause contamination.	1.8.1 Inspect the machines, equipment, and tools.

Items	Requirements	Inspection Methods
1.9 Facilities	1.9.1 Personal hygiene facilities and toilets for the workers shall be adequately provided.	1.9.1 Check availability of the facilities.
	1.9.2 Storage for hazardous chemicals and pesticides (if any) shall be secure and separated.	1.9.2 Inspect the chemicals storage and related practices.
	1.9.3 Water used for either cleaning and moistening the in-pod peanuts shall be clean.	1.9.3 Check the water used.
2. Control of operation 2.1 Raw material receiving	2.1 Peanut raw materials shall be checked for moisture content, defects, general appearances, and handling during transportation according to the practices and criteria as indicated in the Appendix B, Section B.2.1.2 and B.2.1.3.	2.1 Inspect the raw materials and check the record of quality control. In case of suspicion, samples shall be taken for aflatoxin analysis.
2.2 Conditioning and storage prior to shelling	2.2.1 If the peanut raw materials do not meet the requirements especially when the moisture contents exceed 9 %, they shall be conditioned before storage.	2.2.1 Inspect the raw materials. In case of suspicion, samples of dried in-pod peanut in the storage shall be tested for moisture content.
	2.2.2 In case of fresh in-pod peanuts, they shall be dried as quick as possible following the recommendation in Appendix B, Section B.2.2.2.	2.2.2 Inspect the raw materials. In case of doubt, samples of dried in-pod peanut in the storage shall be tested for moisture content.
	2.2.3 The in-pod peanuts shall be cleaned before shelling following the recommendation in Appendix B, Section B.2.2.3.	2.2.3 Check the cleaning method.
	2.2.4 Preventive measure of dried in-pod peanuts from moisture buildup shall be in place.	2.2.4 Check the operation. In case of suspicion, samples of dried in-pod peanut in the storage shall be tested for moisture content.
2.3 Shelling and sizing	2.3.1 If dried in-pod peanuts need to be moistened to lessen the kernel from cracking, the kernel	2.3.1 Sample of kernel for moisture content testing.

Items	Requirements	Inspection Methods
	shall be dried to less than 9% moisture content immediately after shelling.	
	2.3.2 The elimination process of foreign materials such as stone, dirt shall be in place.	2.3.2 Take samples for visual inspection.
2.4 Kernel sorting	2.4.1 Mouldy, broken, damaged kernels and foreign materials shall be culled off following the recommendation in Appendix B, Section B.2.4.1.	2.4.1 Check the operation
	2.4.2 Defected kernels shall be separately kept in the container with clear identification	2.4.2 Check the operation and the identification.
2.5 Packaging and storage of peanut kernels	2.5.1 The packaging materials shall be clean and hygienic.	2.5.1 Check the packaging materials.
	2.5.2 In case of long storage, the kernel quality shall be checked during the storage	2.5.2.1 Inspect the storage and identification on the container 2.5.2.2 Check the report of aflatoxin analysis.
3. Maintenance and sanitation 3.1 Maintenance and cleaning of equipment, tools, and premises	3.1.1 Equipment, tools, and premises shall be properly maintained and cleaned; and such activities shall be recorded as evidence.	3.1.1 Check the practices and the record of maintenance and sanitation.
	3.1.2 If water is used, follow the recommendation in Appendix B, Section B.3.1.3.	3.1.2 Check the practice.
3.2 Waste or shelling by-product management	3.2 The waste or by-product from shelling shall be collected and disposed at the designated disposal area.	3.2 Check the practice and the management record of waste or by-products.
4. Personal hygiene	4 The workers and visitors entering the production area shall follow the personal hygiene procedure.	4 Check the practice of workers and visitors and the personal hygiene procedure of the shelling plant.
5. Transportation		

Items	Requirements	Inspection Methods
	5.1 The transporting vehicle shall be sturdy, suitable, clean, and well maintained so as not to be the source of contamination from hazardous substances during transportation.	5.1 Inspect the transporting vehicle and check the record.
	5.2 Loaded area of the vehicle shall prevent the peanuts from wetness and dampness during transportation.	5.2 Inspect the transporting vehicle and check the record.
6.Product information	6. The production lot shall be identified on the label or accompanying document of the product for traceability.	6. Visual inspection and check the label or accompanying document of the product.
7. Training	7. The workers shall have a proper knowledge or be trained to work correctly and hygienically.	7. Assess the workers knowledge and understanding or check the training documents.
8. Record keeping	8.The control of operation shall be recorded	8. Check the record.

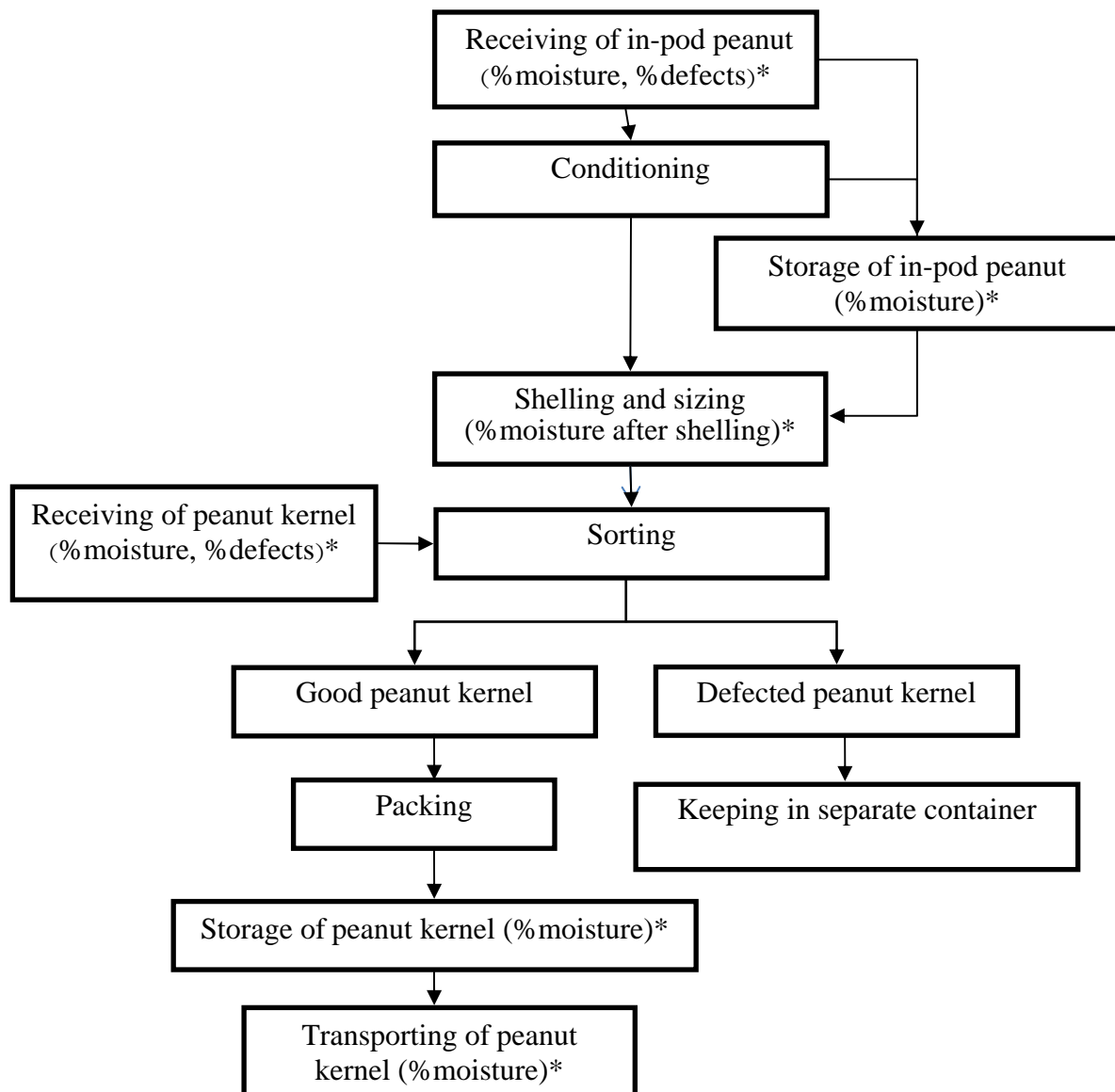
4. GUIDANCE ON GOOD MANUFACTURING PRACTICES FOR PEANUT SHELLING PLANT

The recommendations on good manufacturing practices for peanut shelling plant are provided to obtain good quality peanut kernels that are safe and suitable as raw materials in processing for consumption. Details of the recommendations are given in Appendix B.

APPENDIX A

FLOW CHART OF THE OPERATION OF PEANUT SHELLING PLANT

(Section 1.1)



**Note: the terms in parentheses refer to the factors that may be used in the control of peanut quality in various steps. The moisture of in-pod peanut and peanut kernel shall not exceed 9%.*

APPENDIX B**GUIDANCE ON GOOD MANUFACTURING PRACTICES FOR PEANUT SHELLING PLANT**

(Section 4)

B.1 ESTABLISHMENT**B.1.1 LOCATION**

The shelling plant shall be located in an area where there is no potential source of contamination to the peanuts, such as polluted industrial area, the waterlogged area, or the area with excessive dust. If it is unavoidable, the proper preventive measure shall be in place.

B.1.2 Raw material receiving and cleaning area

B.1.2.1 The area shall be separated from other working areas.

B.1.2.2 In case no water cleaning process, such area shall be distant from the cleaned peanut area.

B.1.2.3 In case water is used, such area shall be separated from the dried peanut area.

B.1.3 Drying area

B.1.3.1 The floor shall be made of concrete with smooth and clean surface without waterlogging and rubbish. In case it is not a concrete floor, the peanuts shall be dried on floor covering sheet that can prevent contamination and minimise moisture buildup from the ground.

B.1.3.2 During the drying process, there shall be a measure to prevent pets and disease carrier animals from entering the area.

B.1.4 Storage of peanut raw material

B.1.4.1 There shall not be any possible access that allows birds and rodent harbourage and no leak on the wall or roof that may cause water seepage and wet the peanut raw materials.

B.1.4.2 The storage should be designed to allow vents on the upper part for good ventilation. The storage should be regularly checked for leaks and signs of pest harbourage.

B.1.4.3 Wall, ceiling, and other accessories such as lamps or ceiling boards over the working area should be installed in such a way, or made of materials that will not accumulate dust or condensed water that could moisten the dried in-pod peanuts.

B.1.4.4 Materials used for building or storage construction should be easy to clean and not easily cause contamination. The measure to prevent pathogenic microbial accumulation and contamination should be in place.

B.1.5 Shelling area

B.1.5.1 The area shall be able to prevent access of pets and disease carrier animals from entering to the working area.

B.1.5.2 Measure to control and reduce dust from the shelling process shall be in place or in compliance with the relevant laws and regulations.

B.1.6 Kernel sorting area

The area shall be separated from the shelling area. It shall have sufficient lighting to differentiate the colours or defected kernels. Inside the building, it should be designed to have proper lighting; and type of light sources should be similar to that of natural light. If a light meter is available, the light intensity is recommended to be at least 540 lux.

B.1.7 Storage peanut kernel and packaging material

B.1.7.1 There shall not be any possible access that allows birds and rodent harbourage and any leak on the wall or roof that may cause water seepage and wet the kernel. The storage shall be separated from the peanut raw material storage.

B.1.7.2 The kernel storage shall be a sturdy building without crack or leak on the walls, floor, and roof. If there are openings, they shall be sealed off with net to prevent birds or rodent. Such openings shall be situated in the area inaccessible by rain or dampness. The building should be well ventilated to reduce the chance of moisture buildup. All of those openings should be able to be closed when needed.

B.1.7.3 Materials used for storage construction should be easy to clean and not easily cause contamination. The measure to prevent pathogenic microbial accumulation and contamination should be in place.

B.1.8 Machines, equipment, and tools

Machines, equipment, and tools whether or not in direct contact with the peanut raw materials and products shall be suitable for the operation, easy to maintain, clean, and not easily cause contamination.

B.1.9 Facilities

B.1.9.1 Personal hygiene facilities and toilets for the workers shall be adequately provided.

B.1.9.2 Storage for hazardous chemicals and pesticides (if any) shall be secure and separated.

B.1.9.3 Water used for either cleaning and moistening the in-pod peanuts shall be clean.

B.1.9.4 System and facilities for drainage and waste disposal shall be adequately provided. Contamination to peanut raw materials and products shall be avoided.

B.2 Control of operation

B.2.1 Raw material receiving

B.2.1.1 Quality of the raw materials shall be checked at the receiving point. The purchaser should provide education to growers on Good Agricultural Practices for Peanut to reduce the chance of aflatoxin contamination at the farm level.

B.2.1.2 In-pod peanut receiving, the raw materials should be checked for moisture content, defects, general appearances such as dirt and dust, off odour or abnormal colour. Transportation handling should be examined, such as covering materials for protection. The purchaser should know the production source and details of each lot. If it is found that the quality of such lot is not complied with the specification, it should be separated from the others for quality analyses, including mould and aflatoxin contamination. The preliminary step may be done by sampling from such lot to sort and calculate the percentage of defected pods. If a large number of mould, especially *Aspergillus flavus* and/or *Aspergillus parasiticus*, is found, the lot shall not be used for direct consumption. In case there is evidence indicating that the raw materials are of good quality, the quality inspection during receiving may be randomly inspected.

B.2.1.3 Peanut kernels receiving, the moisture content shall not be higher than 9%. In case the moisture content is higher than 9% or suspected, kernels from such lot shall be sampled for aflatoxin analysis.

B.2.2 Conditioning and storage prior to shelling

For in-pod peanuts, it should be practiced as follows:

B.2.2.1 In case the quality of in-pod peanuts does not meet the requirement for raw materials, they should be conditioned by further sun-drying or using an oven until the moisture content less than 9%, then store prior to shelling.

B.2.2.2 In case of fresh in-pod peanuts, they shall be dried as quick as possible following the recommendation in Appendix A, Section A.5.3 Post-harvest handling in the Thai Agricultural Standard on Good Agricultural Practices for Peanut (TAS 4900).

B.2.2.3 In case that the fresh in-pod peanut are soiled, they should be cleaned before shelling without water such as sieving or wind blowing. If water is used, the in-pod peanuts should be dried as quick as possible. The cleaning will render easy shelling and reducing dirt building of the machine and the cause of aflatoxin contamination after shelling. There should be a preventive measure to protect cross-contamination to cleaned peanuts in this process.

B.2.2.4 Bags containing dried in-pod peanuts, prior to shelling, shall not be stacked directly on the floor. They should be placed on the floor supporting materials with damp proof. If stacked, sufficient space between the rows of bags should be allowed for ventilation and inspection (Figure C.1).

B.2.2.5 In case of bulk storage, the dried in-pod peanuts shall be piled on floor supporting materials or a floor designed to prevent moisture absorption of the in-pod peanut.

B.2.3 Shelling and sizing

B.2.3.1 Avoid moistening the peanuts before shelling. If necessary, the kernels should be dried to less than 9% moisture content immediately after the shelling.

B.2.3.2 Foreign materials such as gravels or dirt shall be sorted out during the operation.

B.2.3.3 The shelling machine should be adjusted to work properly and have the suitable shelling force so as not to break the kernels, and obtain the shelling percentage according to the machine capability.

B.2.4 Kernel sorting

B.2.4.1 Sorting is considered one of the most important steps in quality control of the peanut kernels for consumption. Abnormal, broken or cracked, mouldy kernels without seed testa or with discoloured testa, or those with trace of disease or insect, and foreign matters such as gravels or dirt shall be culled off. Kernel sorting could be done manually, or by sorter, or the combination thereof. Efficacy of kernel sorting should be assessed regularly.

B.2.4.2 Defected kernels shall be separately kept in the container with clear indication to prevent mismanagement and reduce chances of mixing up with the good quality kernel. In addition, the mouldy kernels should be eliminated from the food supply chain or being utilised as ground peanut.

B.2.5 Packaging and storage of peanut kernels

B.2.5.1 The container should be clean and hygienic. The materials used for making container should be appropriate for maintaining kernel quality during their storage. The container should not be contaminated with chemicals and be able to protect the kernels from contamination. Before being used, the container should be inspected for their conditions. In case of reused container, they should be cleaned and dried before use. Kernel packing shall be done under controlled condition against contamination.

B.2.5.2 Peanut kernel storage

B.2.5.2.1 The container should not be placed directly on the floor but should be stacked on pallets to avoid in contact with the floor. A space of at least 0.5 m should be left between the stacks and the wall to allow ventilation. For the ease of inspection, adequate space should also be left between each row (Figure C.3).

B.2.5.2.2 The peanut kernels should be sampled for quality analysis including the level of total aflatoxin contamination which should not to exceed 20 microgram per kilogram ($\mu\text{g}/\text{kg}$ or ppb). In addition, the shelling-plant workers should check and control the risk of rewetting the peanut kernels in all possible means such as the condensed water from air conditioner, wet floor or walls, or condensation occurred during the transfer of cooled containers to the warmer chamber. Besides the moisture problem, infestation by pests such as insects, mites, birds, rodents and contamination from dust and hazardous chemicals should be inspected and monitored.

B.2.5.2.3 In case of long storage, the kernels should be kept in a room with controlled temperature and relative humidity to prevent moisture buildup from the atmosphere and fungal infection. The appropriate relative humidity and temperature are 55% to 65% and 15°C to 20°C, respectively. The kernels should be sampled at intervals for quality analysis until the end of stock. Kernels should not be stored for longer than 1 year.

B.3 Maintenance and sanitation

B.3.1 Maintenance and cleaning

Equipment and tools, drying floor, and areas involved with shelling and kernel sorting should be cleaned continuously and regularly. Debris and dirt inside the dryer, on the conveyor belts, under the shelling machine, in the sieves of the sheller or on the size sorter should be taken care of and disposed off from the area as quick as possible to reduce the risk of contamination and store pest accumulation. The cleaning should include the outside the buildings to lessen the chance of being pest harbourage which could cause problems later. The cleaning should be done as follows:

B.3.1.1 Building, equipment and tools, and other facilities of the shelling plant should be maintained in good condition and ready for the operation. This includes the maintenance of drainage of the building to prevent water logging or flooding in the working areas, as moisture is the key factor leading to aflatoxin contamination.

B.3.1.2 Water cleaning should be avoided to lessen the chance of wetting or accumulating moisture in the areas that may lead to fungal growth and contamination of the peanut. Vacuum cleaning is one of the good examples of cleaning without using water.

B.3.1.3 If the cleaning equipment and tools, and working area is done by water, detergents, or disinfectants, it shall be taken good care of, so as not to wet or contaminate the in-pod peanuts or peanut kernels.

B.3.1.4 There should be a pest control plan such as monitoring of trace of rodents that may damage the produce. The method and tools for controlling pest are allowed for food processing plants. If such method and tools are involved with pesticides, the sheller should consult certified pest control contractors for their services.

B.3.2 Waste or shelling by-product management

Waste or by-product from the shelling such as gravels, soil, shells, and defected kernels should be collected and clearly identified. They should be brought out to the designated disposal or other specified area immediately at the end of each working day to reduce the risk of contamination.

B.4 Personal hygiene

B.4.1 At the recruitment, workers should have a medical check-up and health certificate stating that they are free of any infectious disease that may cause contamination in food.

B.4.2 Workers should have a medical check-up occasionally for their health and as a monitoring procedure for contagious diseases such as diarrhoea or infected wounds that could contaminate food. Sick workers should be allowed for sick leave immediately.

B.4.3 Workers should have hand cleaning habit and always clean hands when return back to the production area or after using toilet.

B.4.4 Workers working with peanut kernels should pay special attention to their personal hygiene such as nails cutting, wearing hair net or cap, clean clothes, no smoking or spitting in the working area.

B.4.5 The gloves and shoes shall be clean.

B.4.6 Visitors entering the shelling plant should follow the same personal hygiene procedure as workers.

B.4.7 Cleanliness and personal hygiene of the workers should be taken care of and recorded.

B.5 Transportation

B.5.1 Vehicle for peanut transportation should be sturdy and suitable. The loaded area of the vehicle should be made of materials and designed to facilitate cleaning and be taken good care of so as not to be the source of contamination during transportation.

B.5.2 The loaded area of the vehicle should be able to prevent peanuts from sunlight and rain.

B.6 Product information

After being packed, the packaging should be labelled, or marked, or accompanied by a document indicating name of the shelling plant or production place, date, and lot number. The shelling plant should record specific information of each particular lot, such as a special treatment for traceability purposes.

B.7 Training

The workers required a certain skill and knowledge such as operators at the raw material receiving, shelling machine, and kernel sorting should have a specific training on food safety, quality control relating to aflatoxin contamination, and shelling plant sanitation.

B.8 Record keeping

B.8.1 All controls of operation should be recorded. The document and record forms should be updated and counter-signed by both workers and supervisors every time.

B.8.2 Important records and documents relating to the control of operation should be kept for at least 2 years for inspection.

APPENDIX C
PHOTOS
(Section B.2.2.4 and B.2.5.2.1)



Figure C.1 Dried in-pod peanuts in gunny bags stacked on a pallet without direct contact to the floor

Source: Report on the Analysis/Revision of Information on Characteristics, Quality and Safety to Establish the Standard for Peanuts, the collaborative project between the National Bureau of Agricultural Commodity and Food Standards and Khon Kaen University



Figure C.2 Dried peanut kernels in plastic bags stacked on a pallet without direct contact to the floor

Source: Courtesy from Associate Professor Juangjun Duangpatra, Faculty of Agriculture, Kasetsart University



Figure C.3 Dried peanut kernels in gunny bags stacked on a pallet without direct contact to the floor

Source: Courtesy from Mae-Ruay Agriculture (Koh-Kae) Co.,Ltd.



Figure C.4 Defected peanut kernels compared to good quality kernels

Source: Report on the Analysis/Revision of Information on Characteristics, Quality and Safety to Establish the Standard for Peanuts, the collaborative project between the National Bureau of Agricultural Commodity and Food Standards

APPENDIX D**UNIT**

The units and symbols used in this standard and the units recognized by the International System of units (*Le Système International d' Unités*) or SI are as follows:

Measurement	Unit	Symbol
Length	metre	m
Weight	microgram	µg
	kilogram	kg
Temperature	degree Celsius	°C
Illuminance	lux	lx
Ratio	percent	%