NC

DRAFT NCP XXX

DRAFT NIGERIAN CODE OF PRACTICE

CODE OF PRACTICE FOR MILLING OF RICE

Approved by: Price group:

SON [redacted]

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Foreword

Milling is a critical step in post –production of rice. The basic objective of a rice milling system is to remove the husk and bran layers and produce an edible, white rice kernel that is sufficiently milled and free of impurities.

The need to have milled rice that is safe for consumption has necessitated the elaboration of this Code of Practice by the Technical Committee on Cereals, Grains, legumes and their Products. It is expected that the Code of Practice will guide manufactures and millers of rice on all activities involved in milling to produce high quality rice which is safe for all.

In elaborating this Code of Practice, references made to International Standard, data from research institute, manufacturers, industries and other relevant stake holders are hereby acknowledged.

1.0 Scope

This Nigerian Code of Practice establishes recommended Good Manufacturing Practices/Good Hygienic Practices for all activities involved in milling paddy rice and its entire production processes including paddy receiving, cleaning, parboiling drying, de-husking, polishing, and storage of milled rice.

2.0 Normative References

The following references contain provisions applicable to this Nigerian Industrial Standard. At the time of this publication the editions indicated are valid. These Standards and publications are subject to revisions and parties to using this standard are encouraged to investigate the possibility of applying the recent editions of these references indicated below

NIS XXX :2014 - Nigerian Industrial Standard for Milled Rice

NIS XXX :2015 - Nigerian Industrial Standard for Paddy Rice.

NIS 554: 2007 - Nigerian Industrial Standard for Drinking Water Quality

NCP XXX: 2016 - Paddy Rice: Code of Practice for the Harvest ,Transportation , Handling Drying and Storage of paddy rice.

3.0 Terminologies

For the purpose of this Code of Practice, the following terminologies shall apply:

3.1 brown rice or husked rice
Paddy rice which only its husk is removed whilst its germ and pericarp are retained.
Rice head

Broken rice

3.2 by-product
husk and bran.

3.3 milled rice or white rice
husked rice which is polished to remove parts of germ and pericarp.

3.4 paddy
un-husked rice.

3.5 parboiled rice
brown or milled rice from paddy that has been soaked, steamed, and dried, before milling and polishing.

3.6 rice mill
an establishment used for paddy milling to be milled rice or brown rice by using machinery. This also includes the milling of parboiled rice (optional).

3.7 rice
non-glutinous and glutinous rice from *Oryza spp*

3.8 rice products
brown rice, milled rice broken and small broken.

3.9 yellow kernels
milled rice that parts of its kernel turn into yellow during Storage

4.0 GUIDELINES FOR THE GOOD MANUFACTURING PROCESSES IN PRODUCTION

4.1 Establishment	
4.1.1 Location	**4.1.1.1** The establishment shall be located in an area with no adverse impact to the communities. Effective preventive measures against pollution caused by noise, dust and smoke, generated during the production operations of rice mill shall be in place. It is advisable that A new rice mill is established away from residential communities. **4.1.1.2** The establishment shall not be located in an area that may cause contamination to rice products, such as waste disposal dump sites. If it is unavoidable, effective preventive measures against the contamination caused by disease carrier animals and other contaminants that may adversely affect to the quality of rice products shall be in place. **4.1.1.3**The establishment should be located in an area not subject to flooding. The location area should be stable without crack or shrinkage which may result in the ground breaking or sinking. **4.1.1.4** The selected area should have sufficient open spaces to provide areas for operation separated from office space, accommodation, parking area, waste water

	treatment system and other necessary facilities. **4.1.1.5** The location shall be in an area that is easy to transport and access. Adequate infrastructures shall be available

4.1.2 Building and operating areas **4.1.2.1 Drying area**	Where the production process makes use of drying areas the following shall apply [note the use of modern integrated drying processes do not make use of separate drying areas]: 4.1.2.1. Floor shall be made of smooth concrete, clean, no water logging, and free of rubbish.. 4.1.1.2 The drying area shall be protected from the entry of pets and disease carrier animals, and installed with walled fences.
4.1.2.2 Soaking and steaming areas	4.1.2.2.1 Building structure shall be made of strong and durable materials, easy to clean and maintain. (a) Wall, partition and floor shall be water-proof, non-absorbent, and made of non-toxic materials suitable for its intended use. (b) Wall, partition and floor should have smooth surfaces. (c) Floor should be designed for good drainage and no water - logging
4.1.2.3 Storage areas for paddy, rice products and by-products	For normal storage with no control of temperature and relative humidity, the paddy arrangements can be categorized into two methods, bulk and bag storage, such as gunny bags or plastic bags etc. Such area shall have the following characteristics: (a) Designated areas for each product shall be provided separately in order to prevent the mix-ups and contamination, and to allow piles of paddy, rice products and by-product to be arranged according to types. (b) Building structure shall be made of durable materials, strong, water-proof, with smooth surface and non-toxic, and easy to clean and maintain. (c) Storage areas shall be able to prevent the entry of pests and disease carrier animals, such as rodents and birds. (d) Storage areas shall be able to protect against moisture. (f) Adequate ventilation shall be provided to remove heat and moisture out of piles of products in order to minimize the damage caused by fungi and storage pests. For Silo storage (1) Silo shall be able to allow effective circulation of paddy or rice products by the basis of first-in and first-out system without any leftover. In addition, silo and its surrounding area shall be clean, dry, no drains or any outlet that be able to allow an access of pests and disease carrier animals, such as rodents. (2) Silo structure shall be strong and easy to clean and maintain.

	(3) (4) Silo shall be able to protect against moisture. (5) Silo shall have adequate ventilation, or ambient temperature and relative humidity control systems in order to prevent the accumulation of heat and moisture affecting the damage to rice, including the formation of mold and the growth of microorganisms as well as to prevent the breeding ground of rice pests.
4.1.2.4 Areas assigned for paddy cleaning, dehusking, polishing, grading and rice product packing	4.1.2.4.1 Areas shall be designed to have adequate operational working spaces and clearly separated in a logical order corresponding to the sequence of operations in order to facilitate the operations and provide effective protection against the contamination from pests and disease carrier animals. Particularly, a separate area for packing of rice products shall be provided in a closed system as much as practicable so as to minimize the potential risk of contamination of rice products since the contamination cannot be eliminated after this stage. 4.1.2.4.2 Building structure shall be strong and made of durable and non-toxic materials, smooth, easy to clean and maintain. 4.1.2.4.3 Adequate areas assigned for paddy receiving and temporary storage of bags containing polished rice for transport should be at least five times larger than the packing area being used currently. 4.1.2.4.4 In case a rice product packing room is constructed, the followings should be taken into account: (1) The packing room shall be a closed system. (2) The building structure shall be durable and strong. Floor and wall shall be strong, smooth without cracks, made of non-toxic materials, easy to clean and maintain. (3) The packing room shall be clean. Effective cleaning programme shall be provided. Personal hygiene shall be controlled. (4) Effective preventive measures against moisture, dust, pests and disease carrier animals shall be established and implemented. (5) Adequate lighting shall be provided in proper positions and installed with protection covers so as to prevent the contamination of glass debris.
4.1.3 Equipment, machinery and utensils **4.1.3.1 Equipment, machinery and utensils**	4.1.3.1 Equipment, machinery and utensils appropriate for production capacity shall be designed and installed by selecting accurate specifications, types and sizes corresponding to each production stage with sufficient numbers for operation, and ready for use. In addition, they should be installed in the positions convenient for operations, cleaning and maintenance, by taking into account the potential risk of causing contamination. 4.1.3.2 All equipment, machinery and utensils used in the production shall be strong, durable and made of materials appropriate for operations in each stage of production processes, provided that they do not cause contamination harmful to the

	consumer and shed any particulate matter such as metal and stone particles, paints or lubricant by which the rice products can be contaminated. 4.1.3.3 All equipment, machinery and utensils used in the production shall be regularly cleaned and maintained in order to ensure their readiness for use. 4.1.3.4 The equipment, machinery and utensils shall be checked for accuracy before use, especially moisture meters, mechanical driers, silos used for paddy and rice storage, stone and metal particle separators, colour sorters and rice packing machines in order to ensure that they can perform correctly and effectively.
4.1.4 Facilities	4.1.4.1 Appropriate and adequate ventilation shall be provided in the production area. 4.1.4.2 Appropriate and adequate lighting shall be provided in the quality control areas where the quality is visually inspected. In general, the light intensity should be as follows: (1) Inspection areas not less than 540 lux (adequate to be able to differentiate grain quality) (2) Operating areas 220 lux (adequate to support safe operation of equipment) (3) Other areas 110 lux (adequate to ensure general safety) 4.1.4.3 Water used in the processing of rice shall be meet the Nigeria Industrial Standards for drinking water quality (NIS 554:2007) . 4.1.4.4 Adequate number of cleaning facilities appropriate to its intended use shall be provided, ready for use and kept separately in proper areas. 4.1.4.5 Adequate systems and facilities for drainage and waste disposal shall be provided in the production area. Adequate amount of waste containers with lid covers shall be provided with the procedures that detailed the identification, separation, and elimination of waste or unqualified [rejected or non-conforming] rice products away from the production area. The manufacturer shall ensure that these areas do not allow the harbourage of germs and disease carrier animals such as birds and rodents. 4.1.4.6 Adequate facilities for personal hygiene shall be provided, such as caps, hair nets, mouth cover masks, hand gloves, hand wash basins and toilets. 4.1.4.7 Personal Protective Equipment shall be provided, such as dust mask, hearing protection and others including safety symbols in the production area. 4.1.4.8 Toilets shall be separate from the production area or not directly open to the production area. In addition, the toilets shall be maintained in hygienic conditions, ready for use, and equipped with hand wash basins in front of the toilets with soap or detergent, and hand drier facilities. 4.1.4.9 Storage and use of hazardous substances 4.1.4.9.1 All hazardous substances, such as disinfectants and pesticides, shall be clearly identified with labels and stored in an appropriate and secure areas isolated from the production area in order to prevent contamination. 4.1.4.9.2 4.1.4.9.3 Information of receiving and dispensing hazardous substances including the amounts of use and storage shall be recorded. .

	4.1.4.9.4 Personnel in charge of operating hazardous substances shall be regularly trained to acquire specific knowledge on the proper uses of hazardous substances.

4.2	**Control of operations**
4.2.1 Paddy receiving . 	4.2.1 Paddy to be received should be from: (1) Those fields that conforms to Good Agricultural Practices for Rice and fully satisfy the requirements of the Nigerian Industrial Standard for Paddy Rice (NIS XXX: 2015) 2) Those fields that have followed the Good Agricultural Practices for Rice established in the Paddy Rice: Code of Practice for the harvest Transportation, Handling, Drying and Storage. (NCP XXX:2016) 3) Clear criteria or specific requirements for purchasing paddy shall be established and implemented, such as paddy condition, foreign matters, paddy moisture content and milling quality. (records of the source of the grain and the receiving quality shall be maintained for each batch) 4) Random sampling for quality control inspection shall be carried out before purchasing. The quality requirements, such as variety, cleanliness, foreign matters, moisture content, milling quality and contamination of pests, shall be inspected. 5) random sampling for pesticide residue analysis shall be carried out in order to receive paddy of required quality.
4.2.2 Pre- cleaning	4.2.2.1 Prior to the actual milling operation, the paddy received from silos is cleaned. Foreign matter or impurities, stones are removed to protect the processing equipment and improve final product. The cleaned paddy should be stored in bins for subsequent processing.
4.2.3 Soaking and steaming.(Parboiling)	4.2.3.1 In parboiling the paddy is soaked in hot water (usually in a range 60°C up to 90°C) for a maximum of 8 hours (the temperature and time of soaking differs depending on the paddy variety and the equipment used). and subsequently steamed and dried before milling. This helps in minimizing the breakage of rice and reduces the loss of nutrients during milling. 4.2.3.2 Water used in soaking and steaming processes shall be clean and free of residues harmful for consumption. Recycled water should not be used as this may present the build-up contamination of microorganisms during the soaking process, which consequently forms sour odour in the paddy. 4.2.3.3 Containers used in soaking and steaming processes shall be thoroughly cleaned after use by completely removing all residues of rice or dirt from the containers, followed by washing with clean water in order to prevent the contamination and the accumulation of mould 4.2.3.4 Weighing equipment, volumetric flasks and thermometers shall be calibrated at least once a year.

<table>
<tr><td>4.2.4 Drying</td><td>4.2.4.1Paddy that has moisture content above 15% shall undergo the drying process within 24 hours prior to storage in order to minimize the risk of mould formation and the occurrence of yellow kernel.

4.2.4.2 Sun drying: Appropriate thickness of paddy layer for sun drying is approximately 5 to 10 cm. The layer should be turned over at frequent intervals or every two hours or four times a day in order to permit the rapid and uniform reduction of moisture content. Too long period of drying should be avoided. Drying period depends on the initial moisture content, thickness of paddy layer, turnover frequency and the required moisture content. Generally, the drying should be ceased when the moisture content is reduced to an indeal moisture level between 12% and 14% depending on the variety of rice.

4.2.4.3 Mechanical drying: Initial moisture content of paddy shall be at a maximum of 25% or less. Drying shall be performed at a maximum temperature of not over 50°C with the relative humidity less than 60%. In addition, drying rate should not be too fast or the paddy will be damaged.
4.2.4.4 Fluidized bed drying: This drying method uses hot air at a minimum temperature of 80°C to blow the paddy to reduce the moisture content. The paddy should not be dried to less 19% moisture content, otherwise it will be broken. After the moisture content is reduced to 19%, the paddy should be piled up, left to cool down and followed by mechanical drying to allow gradual reduction of the moisture content until it reaches the requirement of 12% to 14% approximately.</td></tr>
<tr><td>4.2.5 Paddy storage</td><td>4.2.5.1 Paddy to be stored shall be clean and free of foreign matters, such as straw, stubble, weed, gravel, stone, soil and sand. Duration for safe storage depends on the moisture content of paddy as follows:
<table><tr><th>Storage duration (months)</th><th>Moisture content(% g/100g)</th></tr><tr><td>2</td><td>14</td></tr><tr><td>8 to 12</td><td>12 to 14</td></tr></table>
4.2.5.2 Temperature and relative humidity inside the paddy storage should be controlled to be lower than the conditions that promote the growth of microorganism and pest (Optimum conditions for microbial growth are at 30°C to 40°C and more than 65% relative humidity. For storage pest, favourable conditions for their growth are at 25°C to 35°C and 65% to 80% relative humidity). If temperature and relative humidity are too high, they will adversely affect the paddy quality.

4.2.5.3 Circulation of paddy shall be controlled so that the former is used first and the latter is stored efficiently. Paddy of deteriorated quality shall be managed to be completely removed from the storage area.

4.2.5.4 When the temperature and moisture content within a pile of paddy increase, those piles should be relocated or turned over periodically in order to release the excess of heat and the humidity accumulated within the pile.</td></tr>
<tr><td>4.2.6. Dehusking,</td><td>4.2.6 The hulling /dehusking operation is carried out to remove the husk from paddy grain with a minimum damage to the bran layer and if possible</td></tr>
</table>

polishing and grading	without breaking the brown rice grain.
4.2.7 Storage of Milled Rice	5.6.1 Stacks of milled rice should be neatly and orderly arranged according to their categories as specified in the Nigerian Industrial Standard for paddy rice (NIS xxx: 2014) . 5.6.2 Milled Rice products should not be stored with pesticides, fertilizers or other chemicals harmful for consumption. 5.6.3 Care should be taken to avoid Milled Rice being directly placed or piled up on the floor or stacked very close to the walls.

5.0 REQUIREMENTS IN PROCESSING AREAS /PRODUCTION PROCESSES

The Requirements and inspection methods should be as shown in Table 2 below

Table 2 Requirements and inspection methods

5.1. Establishment		
ITEMS	**REQUIREMENTS**	**INSPECTION METHODS**
5.1.1 Location	5.1.1 The establishment should be located in an area with no adverse impact to the communities. ……. 5.1.2 The establishment should not be located in an area that may cause contamination to rice products	5.1.1 Visual inspection of surrounding environment and/ or check preventive measures against pollution …… 5.1.2 Visual inspection of surrounding environment and check preventive measures against product contamination
5.1.2 Building and operating Areas **5.1.2.1 Drying Area**	5.1.2.1 The floor should be made of smooth concrete, clean, no water logging, and free of rubbish. In case the floor is not concrete, it should be covered with materials that are able to prevent contamination. ……. 5.1.2.2 The drying area should be protected from the entry of pets and disease carrier animals, and/or installed with fences.	5.1.2.1 Visual inspection of the operating area and and/or interview the operators …….. 5.1.2.2 Visual inspection of drying area and preventive measures
5.1.2.2 Soaking and steaming areas	5.1.2.2 Building structure should be made of strong and durable materials, easy to clean and maintain with good drainage.	5.1.2.2 Check building structure and operating area, particularly drainage and water treatment areas.

5.1.2.3 Storage areas for paddy, rice products and by-products.	5.1.2.3a. For normal storage: (1) Designated areas for each product should be provided separately in order to prevent the mix-ups and contamination. (2) Building structure should be strong, easy to clean and maintain. (3) Storage areas should be able to prevent the entry of pests and disease carrier animals (4)Storage areas shall be able to protect against moisture (5)Adequate ventilation shall be provided ……..... 5.1.2.3b For silo storage: (1) Silo should be designed in order to allow effective circulation of paddy or rice products by the basis of first-in and first-out system without any leftover. (2) Silo structure should be strong, easy to clean and maintain. (3) Silo should be able to prevent the entry of pests and disease carrier animals. (4) Silo should be able to protect against moisture. (5) Adequate ventilation or ambient temperature and relative humidity control systems should be provided	5.1.2.3a Check storage areas, structure, and control measures against pests, disease carrier animals and moisture …… 5.1.3.2 Check , silo, structure, ventilation and records of ambient temperature and relative humidity
5.1.2 .4 Areas assigned for paddy cleaning, de-husking, polishing grading and rice product packing	5.1.2 .4.1 Areas should be designed to have adequate working spaces and clearly separated from one another which are able to prevent contamination from pests and disease carrier animals. …… 5.1.2 .4.2 Building structure should be strong, made of durable materials, easy to clean and maintain	5.1.2 .4.1 Check the layout of the building and operating areas …… 5.1.2 .4.2 Check building structure and operating areas
5.1.3 Equipment, machinery and utensils	5.1.3.1 Specifications, types and sizes of equipment, machinery and utensils used in the production should be appropriate for production capacity . …… 5.1.3.2 Equipment, machinery and utensils should be strong, durable and made of appropriate materials that do not cause contamination harmful to the consumer and shed any particulate matter to rice products.	5.1.3.1 Check equipment, machinery and utensils and/or interview the operators …….. 5.1.3.2 Check equipment, machinery and utensils and check preventive measures against contamination

	…… 5.1.3.3 Equipment, machinery and utensils should be regularly cleaned and maintained …… 5.1.3.4 The equipment, machinery and utensils should be checked for accuracy before use.	…….. 5.1.3.3 Check the work plan and operations …… 5.1.3.4 Check the test records of equipment, machinery and utensils.
5.1.4 Facilities	5.1.4.1Adequate ventilation should be provided in the production area. …… 5.1.4.2 Adequate lighting should be provided in the quality control areas where the quality is visually inspected. …… 5.1.4.3 Water used in the rice polishing process should be sufficient and meet the standards of potable water …… 5.1.4.4 Adequate number of cleaning facilities should be provided and ready for use. …… 5.1.4.5 Adequate systems and facilities for drainage and waste disposal should be provided …… 5.1.4.6 Adequate facilities for personal hygiene and toilets should be provided …… 5.1.4.7 Hazardous substances shall be stored in a secure and separated area.	5.1.4..1 Check ventilation in the production area. …….. 5.1.4.2 Check the light intensity. …… 5.1.4.3 Check records of analytical results of water quality used in rice polishing process …… 5.1.4.4 Check availability and sufficiency of cleaning facilities …… 5.1.4.5 Check systems or facilities for drainage and waste disposal and records of waste disposal …… 5.1.4.6 Check necessary personal hygiene facilities and toilets. …… 5.1.4.7 Check chemical storage area and practices.
5.2 Control of operation **5.2.1 Paddy receiving**	5.2.1 Paddy to be received should be from: (1) Those fields that conforms to Agricultural Practices for Rice and shall fully satisfy the requirements of The Nigerian Industrial Standard for Paddy Rice (NIS XXX: 2015) 2) Those fields that have followed the Good Agricultural Practices established in - Paddy Rice: Code of Practice for the Harvest ,Transportation , Handling Drying and Storage of paddy rice (NIS XXX:2016) (3) Known sources of production which can be	5.2.1 Check records of paddy receiving and operation and/or interview

	traced. …… …..	
	5.2.2 Clear criteria for purchasing paddy should be established and implemented. …… 5.2.3 The accuracy of equipment used for paddy quality inspection (paddy husker, polisher, round sieve used for sorting broken kernels) and amylose assay kit should be checked according to the manual 5.2.4 Weighing equipment, and paddy moisture meters should be calibrated at least once a year.	5.2.2 Check the purchasing operation and records of paddy quality inspection and/or interview …….. …….. 5.2.3 Check records of the accuracy of equipment used for paddy quality inspection and amylose assay kit. 5.2.4 Check report of calibration
5.2.2 Soaking and steaming /Per-boiling	5.2.2.1 Water used in soaking and steaming processes should conform to NIS 544: 2007 Standard for Drinking Water Quality water. 5.2.2.2. Containers used in soaking and steaming processes should be thoroughly cleaned after use 5.2.2.3 Weighing equipment, volumetric flasks and thermometers should be calibrated at least once a year	5.2.2.1 Check record of water quality analytical results. 5.2.2.2 Check the record of operation and interview 5.2.2.3 Check the report of equipment calibration
.5.2.3 Drying	5.2.3 Paddy that has moisture content above 15% should undergo the drying process within 24 hours prior to storage.	5.2.3 Check the record of drying or sampling for quality control inspection and/or interview
5.2.4 Paddy storage	5.2.4.1 Paddy shall be stored according to the duration for safe storage and moisture content as shown in …… 5.2.4.2 Adequate ventilation should be provided. …….. 5.2.4.3 Circulation of paddy should be properly	5.2.4.1 Check the stored paddy and randomly check the moisture content …….. 5.2.4.2 Check the paddy storage area and record of operation …… 5.2.4.3 Check the operation and the

	controlled to ensure that there is no quality deterioration of paddy leftover.	record.
5.2.5 Dehusking, polishing and grading	5.2.5.1 Specific systems or preventive measures should be provided for the control and elimination of dust generated during the production processes. 4.2.5.2 Dehusker, polisher, grader, color sorter, stone and metal debris separators should be calibrated at least once a year	5.2.5.1 Check the environment both inside and outside the production area as well as the performance of dust control and elimination system 4.2.5.2 Check the record of equipment calibration
5.2.6 Storage of rice products	5.2.6.1 Stacks of rice products should be neatly and orderly arranged according to their categories and clearly indicated. 5.2.6.2 Rice products should not be stored with pesticides, fertilizers or other chemicals harmful for consumption. 5.2.6.3 Rice products should not be directly placed or piled up on the floor.	5.2.6.1 Check storing practices and storage area. 5.2.6.2 Check storing practices and storage area. 5.2.6.3 Check storing practices
5.2.7 Storage of by-products	5..2.7 By-products should be handled and stored properly in such a way to prevent the mix-ups to milled rice and other rice products	5..2.7 Check storage area of by-products and preventive measures against mix-ups
5.2.8 Record keeping	4.2.8.1 The following information should be recorded: (2) Paddy receiving (3) Quality grading of rice products 4) Cleaning and maintenance (5) Quality parameters to be monitored (6) Performance test of machinery (7) Validation and calibration of equipment, machinery and utensils (8) Control and prevention of disease carrier animals (9) Storage of paddy, rice products, and by-products (11) Historical records of personnel, training and annual medical examination. (12) All records should be maintained for at least 3 years.	5.2.8 Review records.

5.3.Maintenance and Sanitation		
5.3.1Cleaning and maintenance	53.1 Cleaning and maintenance of buildings and areas including equipment, machinery and utensils should be regularly practiced.	5.3.1 Check the cleaning and maintenance program and their records
5.3.2 Controls of insects and disease carrier animals	5.3.2 Effective methods for prevention of insects and disease carrier animals should be provided to prevent the contamination to rice products	5.3.2 Check the control program and records, particularly for paddy drying ground and storage of paddy, rice products and by-products as well as rice packing area.
5.3.3 Disposal of waste, unused or unrelated materials	5.3.3.1 Unqualified rice products should be stored separately in order to prevent the mix-ups to the qualified rice products. ……. 5.3.3.2 Rubbish and waste should be immediately removed from production area and disposed hygienically . …… 5.3.3.3 Unused equipment, machinery and utensils should be removed from production area.	5.3.3.1 Check the storage areas, record of operations and/or interview. …… 5.3.3.2 Check the storage areas, record of operations and/or interview. ……. 5.3.3.3 Check operating area and/or interview

6.0 Hygiene

6.1 Cleaning and maintenance

6.1.1 Cleaning program specifying cleaning methods, frequency, and personnel in charge should be established.

6.1.2 Cleaning, maintenance and repair of floors, walls, ceilings and other facilities, fixed on the walls or on the ceilings, as well as inspection of all openings and cracks should be regularly practiced.

6.13 Adequate drainage systems should be installed with the drain covers in order to avoid accumulation of rubbish and waste which can be potential harboring areas for disease carrier animals, such as rodents, cockroaches and ants.

6.1.4 Equipment, machinery and utensils used in production processes should be cleaned and maintained in a functional condition for efficient use. After cleaning, they should be kept separately in designated areas.

6.1.5 Effective operating programmes for application, inspection, maintenance and repairing of equipment, machinery and utensils used in production processes should be established.

6.2 Personnel Hygiene

6.2.1 Personnel should be regularly examined for good hygienic practices in order to minimize the risk of contamination to paddy and rice products. Personal hygiene and dressing should be recorded.

6.2.2 Personnel should have good health and not suffer from an infectious disease. All personnel whose duties take them into the production area should receive medical health examination for at least once a year. Records of medical health examination should be retained.

6.2.3 Personnel should wear clean clothing suitable for the operations with which they are involved, for example personnel working in rice packing areas should wear hair net, head cover and clothing that is made without wrist buttons. Wearing any accessory is not allowed during the operations.

6.2.4 Personal hygiene should be regularly maintained for example by thoroughly cleaning hand, nail and arm before and after working, including wearing hand gloves, footwear, mouth covering mask, hair net and head cover during the operations in rice packing areas.

6.2.5 Personnel working in the production area should refrain from non-hygienic behavior, such as smoking, spitting, and chewing during the operations.

6.2.6 Visitors who are allowed to enter the production area should receive prior permission and adhere strictly to the personal hygiene instruction according to the specified rules or the requirements referred to in Sections 6.4.

6.3 Controls of insects and disease carrier animals

Good hygienic practices should be employed to avoid creating an environment conducive to the entry of disease carrier animals into the production area. All gaps, drains and areas where disease carrier animals are likely to access should be sealed. Cleanliness of production area for both inside and outside should be regularly maintained and non-conforming rice products and wastes should be discarded. Keep all waste and non-conforming product in sealed containers and disposed or handled hygienically in order to eliminate potential breeding sites.

6. 4 Disposal of waste, unused or unrelated materials

6.4.1 non-conformint rice products should be stored separately and clearly identified in order to prevent the mix-ups to the confrming rice products.

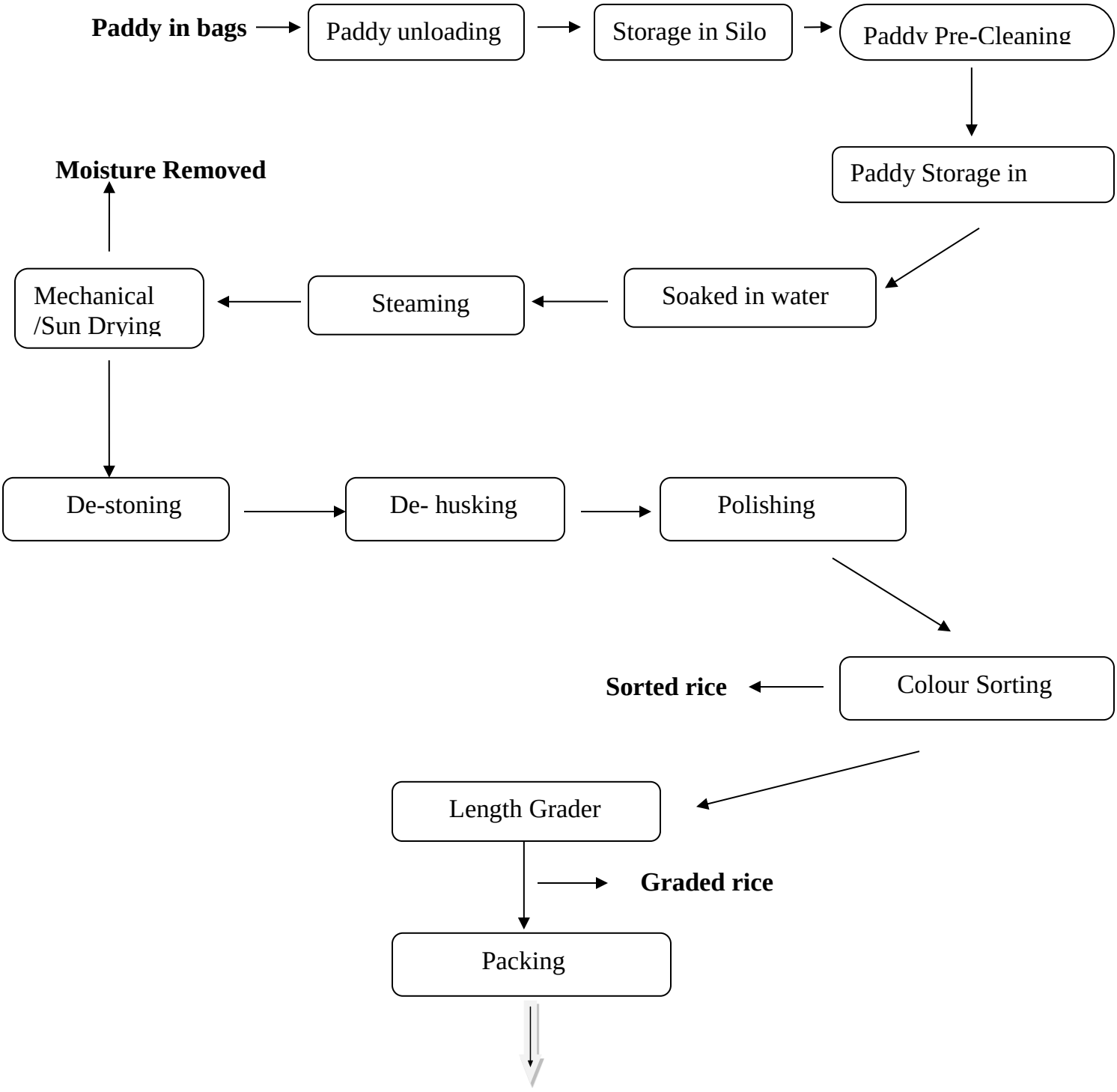
6.4.2 A proper system should be established for separation and removal of rubbish and waste from the production area. Identification, storage, and disposal should be done hygienically by taking into account the risk of contamination to rice products and environment.

6.4.3 Unused, out of order or unrelated equipment, machinery and utensils to the production processes should be removed from the production area and stored separately in the designated area.

6.4.4 Buildings and surrounding areas should be provided with good drainage. Debris from the production should not be remained in drains. The drains should not be designed in such a way that they are in the middle of the building or the production area as they can be an access route for disease carrier animals

ANNEX A

RICE MILLING PROCESS FLOW CHART



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3) United States Standards for Milled Rice.
4) Nigerian Industrial Standard for Milled Rice –NIS
5) Recommended International Code Of. Hygienic Practice For Groundnuts- *CAC/RCP 22-1979*