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DRAFT TANZANIA STANDARD

Bakery units - Code of hygiene

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TANZANIA BUREAU OF STANDARDS

0 FOREWORD

This standard on code of hygiene has been prepared with the view that food safety and quality would be achieved if the factory producing the food is governed by a strict hygienic code in respect of layout, plant, personnel and good manufacturing practices and where possible Hazard analysis and critical control points (HACCP) system.

The standard contains requirements designed to secure satisfactory standards of cleanliness, hygiene and appropriate precautions to safeguard food from risk of contaminants which apply to most premises and food handlers working in the units.

The controls described in this code of conduct document are internationally recognized as essential to ensure the safety and suitability of food for consumption. This document follows the food chain from primary production to the final consumer, setting out the necessary hygiene conditions for producing food which is safe and suitable for consumption.

This code will guide the producers, processors, exporters, importers, food service operators, retailers, consumers, and all involved in the value chain in achieving the safety and quality of the bakery products in Tanzania.

This code should be used in conjunction with the TZS 109 - Food processing units - Code of hygiene.

In the preparation of this standard assistance was derived from;

- IS 5059:1958 - *Code of hygiene for bakery and biscuit manufacturing units, issued by the Indian Standards Institution.*
- CAC/RCP 1:1969: *General principles of food hygiene published by Codex Alimentarius Commission.*
- EAS 39:2000: *Hygiene in the food and drink manufacturing industry- Code of practice published by East Africa Community.*

1.0 SCOPE

This Tanzania Standard represents code of hygienic practices for establishing and maintaining of bakery manufacturing units. Compliance with this code does not confer immunity from relevant statutory and legal requirements.

2. NORMATIVE REFERENCES

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies;

TZS 109 - *Food processing units - Code of hygiene*

TZS 1770 - *Hazard Analysis and Critical Control Point (HACCP) System — Requirements for any organization in the food chain*

3 TERMS AND DEFINITIONS

For the purposes of this code of practice, the following terms and definitions apply.

3.1 bakery

Establishment that produces and/or sell flour based food baked in the oven such as bread, cookies, cakes, etc

3.2 bakeries products

Baked goods such as bread, cookies, cakes etc.

3.3 cleaning

Removal of soil, products residue, dirt, grease or other objectionable matter.

3.4 contaminant

Any biological or chemical agent, foreign matter, or other substances not intentionally added to products which may compromise products safety or suitability

3.5 contamination

Introduction or occurrence of a contaminant in products or product environment

3.6 disinfection

Reduction, by means of chemical agents and/or physical methods, of the number of micro-organisms in the environment, to a level that does not compromise products safety or suitability

3.7 establishment

Any building or area in which product is handled and the surroundings under the control of the same management

3.8 hygiene

All conditions and measures necessary to ensure the safety and suitability of product at all stages of processing

2.9 hazard

Biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect

3.10 HACCP

System which identifies, evaluates, and controls hazards which are significant for product safety

3.11 food handler

Any person who directly handles packaged or unpackaged product, equipment and utensils, contact surfaces and is therefore expected to comply with hygiene requirements

2.12 product safety

Assurance that product will not cause harm to the consumer when it is prepared and/or eaten according to its intended use

3.13 product suitability

Assurance that bakery product is acceptable for human consumption according to its intended use

3.14 protective gears

Clothing or equipment worn by an employee for protection against a hazard such as heat, chemicals and infection in particular blood-borne pathogens. Examples; PPE Gloves, gown, lab coats, face shields or masks, eye protection, mouthpieces, resuscitation bags, pocket masks, or other ventilation devices etc.

4.0 SITE

4.1 A bakery unit should preferably be situated in an open and clean locality, away from shed, open sewage drains, environmentally polluted areas and industrial activities which pose a serious threat of contaminating bakery products or other places likely to breed flies (prone to infestations of pests or breeding of insects, rodents or birds)

4.2 The ground of the premises surrounding the factory buildings should be clean and preferably paved or turfed to lay the dust.

5.0 BUILDINGS

5.1 Structure

5.1.1 The buildings should be of a permanent nature and should be of brick, lime plaster, cement, concrete or any other material which ensures cleanliness, maintenance and where appropriate, able to be disinfected.

5.1.2 Construction of the buildings should be rodent, insect and bird proof and such as to prevent infestation by any other vermin. The building and yard, with fittings and equipment should be kept free from breeding places for flies and other insects, by eliminating cracks and crevices, as well as by routine and thorough cleaning.

5.1.3 Working surfaces that come into direct contact with products should be in sound condition, durable and easy to clean, maintain and disinfect. They should be made of smooth, non-absorbent materials, and inert to the bakery product, to detergents and disinfectants under normal operating conditions.

5.2 internal design and layout

Where appropriate, the internal design and layout of bakery s establishments should permit good hygiene practices, including protection against cross-contamination between and during operations by food staffs.

5.3 Ventilation and lighting

5.3.1 The units should be adequately lighted and ventilated, keeping in mind the number of workers, their hours of work and nature of operations.

5.3.2 Windows should be easy to clean, be constructed to minimize the buildup of dirt and where necessary, be fitted with removable and cleanable insect-proof screens. Where necessary, windows should be fixed.

5.4 Floor

The floor should be washable, with sufficient drainage facility, and it should be impervious to water and not affected by weak acids, alkalis or steam.

5.5 internal walls

The internal walls should be smooth, tiled or cement plastered or made of any other impervious material to the minimum height of 1.5 m from the floor. Where hand-washing basins/sinks are installed, the walls should be made impervious to water up to a floor height (at least up to the height of the wash basin/sinks) from the floor to safeguard the wall from water seepage.

5.6 Ceilings

5.6.1 Ceilings and overhead fixtures should be well constructed to minimize the buildup of dirt and condensation, and the shedding of particles.

5.6.2 The ceilings should be kept clean.

5.7 Maintenance and repairs

5.7.1 The building should be maintained in a proper state of repair and cleanliness. Whenever required, it should be painted, disinfected or deodorized. Repair should not be done during food processing. There should be no cobwebs in any part of the unit.

5.7.2 Preparation and filling tables should be covered with aluminum or stainless steel sheets or otherwise made impervious to water as far as practicable. All surfaces coming into contact with the food should be free from pits, crevices and loose scale and should be non-absorbent.

5.7.3 All internal joinery work should be of simple design for easy cleaning and for minimizing flour dust deposit. In all rooms woodwork surrounding doors, windows and other openings should be fixed tight to the internal wall surfaces so as to avoid open joints which may harbour pests.

5.8 Store rooms

5.8.1 The store rooms for raw and packing materials should be free from dampness and should be rodent proof.

5.8.2 A separate room for storing machinery, equipment, spare parts and pesticides, should be provided in a location convenient to various preparation and processing areas.

5.8.3 Proper places should be provided for storage of brooms, brushes, buckets and other cleaning gear.

5.8.4 Proper places should be provided for storage of final products.

5.8.5 Movement of unauthorized persons in the processing room should be prohibited. When allowed all necessary hygiene precautions should be adhered to.

5.8.6 The equipment and/or items in the store room should be well labeled.

6.0 FACTORY AND PROCESSING HYGIENE

6.1 Waste and rubbish should be collected in covered receptacles and should not be allowed to spread on the floor.

6.2 Adequate measures should be taken to prevent microbial growth on equipment and internal structures of processing and storage rooms.

6.3 Adequate steps should be taken to prevent infestation of cockroaches and other household pests.

6.4 When pesticides and/or disinfectants are used, care should be exercised to prevent contamination of equipment, raw materials and packing materials.

6.5 Floor, walls, ceiling, window glass, light fittings and drains should be kept clean. In the processing room, drains should be provided with detachable covers.

6.6 Sinks and troughs used for washing ingredients and utensils should not be used for washing of hands.

6.7 No lavatory, sink, cesspool, or garbage should be situated or maintained that odours or fumes there from pervade any room where the product or raw materials are prepared or stored.

6.8 The factory effluents should be disposed of in a hygienic manner and should not be let off on road or adjacent fields.

6.9 Container should be clean and not be stacked in a manner which allows the contamination of the product.

6.10 Animals should not be allowed in any part of the unit.

7. CONTROL OF OPERATION

7.1 General

Reduce the risk of unsafe product by taking preventive measures to assure the safety and suitability of product at an appropriate stage in the operation by controlling product hazards.

7.2. Control of Product Hazards

7.2.1 Product business operators may control product hazards through the use of systems such as HACCP whereby they should:

- identify any steps in their operations which are critical to the safety of product;
- implement effective control procedures at those steps;
- monitor control procedures to ensure their continuing effectiveness; and
- review control procedures periodically, and whenever the operations change.

7.2.2 These systems should be applied throughout the product chain to control product hygiene throughout the shelf-life of the product through proper product and process design.

7.2.3 Control procedures may be simple, such as checking stock rotation, and calibrating of electronic weighs equipment. In some cases a system based on expert advice, and involving documentation, may be appropriate. A model of such a product safety system is described in Hazard Analysis and Critical Control (HACCP) standards TZS 1770.

7.3. Key Aspects of Hygiene Control Systems

7.3.1. Time and temperature control

7.3.1.1 Inadequate product temperature control is one of the most common causes of foodborne illness or product spoilage. Such controls include time and temperature of baking, cooling, and storage. Systems should be in place to ensure that temperature is controlled effectively where it is critical to the safety and suitability of product.

7.3.1.2 Temperature control systems should take into account:

- the nature of the product, e.g. its water activity, pH, and likely initial level and types of micro-organisms;
- the intended shelf-life of the product;
- the method of packaging and processing; and
- how the product is intended to be used, e.g. further cooking/processing or ready-to-eat.

7.3.1.3 Such systems should also specify tolerable limits for time and temperature variations.

7.3.1.4 Temperature recording devices should be checked at regular intervals and tested for accuracy.

7.3.2. Specific process steps

Other steps which contribute to product hygiene may include, for example:

- chilling,
- thermal processing,
- drying,
- chemical preservation and
- vacuum or modified atmospheric packaging.

7.3.3. Microbiological and other specifications

Management systems offer an effective way of ensuring the safety and suitability of product. Where microbiological, chemical or physical specifications are used in any product control system, such specifications should be based on sound scientific principles and state, where appropriate, monitoring procedures, analytical methods and action limits.

7.3.4. Microbiological cross-contamination

7.3.4.1 Pathogens can be transferred from one product to another, either by direct contact or by food handlers, contact surfaces or the air. Raw material, unprocessed product should be effectively separated, either physically or by time, from ready-to-eat product, with effective intermediate cleaning and where appropriate disinfection.

7.3.4.2 Access to processing areas may need to be restricted or controlled via a changing facility. Personnel may be required to put on clean protective gear including footwear and wash their hands before entering.

7.3.4.3 Surfaces, utensils, equipment, fixtures and fittings should be thoroughly cleaned and where necessary disinfected after raw material has been handled or processed.

7.3.5. Physical and chemical contamination

Systems should be in place to prevent contamination of product by foreign bodies such as glass or metal shards from machinery, dust, harmful fumes and unwanted chemicals. In processing, suitable detection or screening devices should be used where necessary.

7.4. Incoming Material Requirements

7.4.1 No raw material or ingredient should be accepted by an establishment if it is known to contain parasites, undesirable micro-organisms, pesticides, veterinary drugs or toxins, decomposed or extraneous substances which would not be reduced to an acceptable level by normal sorting and/or processing. Where appropriate, specifications for raw materials should be identified and applied.

7.4.2 Raw materials or ingredients should, where appropriate, be inspected and sorted before processing. Where necessary, laboratory tests should be made to establish fitness for use. Only sound, suitable raw materials or ingredients should be used.

7.4.3 Stocks of raw materials and ingredients should be subject to effective stock rotation.

7.5. Packaging

Packaging design and materials should provide adequate protection for products to minimize contamination, prevent damage, and accommodate proper labelling. Packaging materials or gases where used must be non-toxic and not pose a threat to the safety and suitability of product under the specified conditions of storage and use. Where appropriate, reusable packaging should be suitably durable, easy to clean and, where necessary, disinfect.

7.6. Water

Only potable water should be used in product handling and processing.

7.7. Management and Supervision

Managers and supervisors should have enough knowledge of food hygiene principles and practices to be able to judge potential risks, take appropriate preventive and corrective action, and ensure that effective monitoring and supervision takes place.

7.8 Documentation and Records

Where necessary, appropriate records of processing, production and distribution should be kept and retained for a period that exceeds the shelf-life of the product. Documentation can enhance the credibility and effectiveness of the food safety control system.

7.9. Recall Procedures

7.9.1 Managers should ensure effective procedures are in place to deal with any food safety hazard and to enable the complete, rapid recall of any implicated lot of the finished product from the market. Where a product has been withdrawn because of an immediate health hazard, other products which are produced under similar conditions, and which may present a similar hazard to public health, should be evaluated for safety and may need to be withdrawn. The need for public warnings should be considered.

7.9.2 Recalled products should be held under supervision until they are destroyed, used for purposes other than human consumption, determined to be safe for human consumption, or reprocessed in a manner to ensure their safety.

8.0 INSTALLATION OF EQUIPMENT

8.1 General

8.1.1 All equipment should be installed on a foundation of durable, easily cleanable material, easily monitored and maintainable, functions in accordance with its intended use.

8.1.2 Equipment should be placed at least 30 cm from the walls with a view to facilitate inspection and cleaning.

8.1.3 Installation of pipes should be such as to facilitate easy cleaning and maintenance.

8.1.4 Equipment and containers should be made of materials with no toxic effect in intended use. Where necessary, equipment should be durable and movable or capable of being disassembled to allow for maintenance, cleaning, disinfection, monitoring and, for example, to facilitate inspection for pests.

8.2 Containers for waste and inedible substances

8.2.1 Containers for waste, by-products and inedible or dangerous substances, should be specifically identifiable, suitably constructed and, where appropriate, made of impervious material. Containers used to hold dangerous substances should be identified and, where appropriate, be lockable to prevent malicious or accidental contamination of products.

8.2.2 There should be separate containers for dry and wet wastes.

9.0 EQUIPMENT AND CONTAINER CLEANLINESS

9.1 All electrical connections, such as switch boxes control boxes and conduit cables should be installed in such a way as to facilitate proper cleaning.

9.2 All equipment coming into contact with raw materials or the product should be kept clean. An ample supply of water, hose, brushes, detergents, disinfectants and other equipment necessary for the proper cleaning of machinery and equipment should be available.

9.3 All processing systems should be cleaned at the close of operation or at the termination of the continuous operation period.

10.0 WATER

10.1 There should be an adequate supply of water. The water should be of potable quality.

10.2 The equipment should be so installed and used that siphonage of liquid into the potable water lines is precluded.

10.3 Hot and cold water in ample supply should be provided for plant clean-up needs.

10.4 The storage tanks for water should, unless completely sealed, be kept covered examined regularly and cleaned out at least once every three months.

11.0 EMPLOYEE HYGIENE

11.1 Every person employed in the factory should be medically examined before employment. All the employees should be medically examined at every six months to ensure, that they are free from contagious, or infectious communicable diseases. A record of such examination should be maintained.

11.1.1 The Management should impress on all employees that they notify the medical officer, cases of vomiting, diarrhoea, typhoid, dysentery or any other notifiable disease occurring in their own homes and families.

11.2 Employees should keep their finger nails short and clean and wash their hands with soap or detergent before commencing work and after each absence, especially after using sanitary conveniences. No communal towels should be used. Disposable towels or hot air should be used. No ornaments should be worn during processing.

11.3 All employees should be inoculated and vaccinated against the enteric groups of diseases regularly. In case of an epidemic all workers should be inoculated. Medical examination should be carried out frequently to make sure that those vaccinated against diseases do not develop carrier state. A record should be kept.

11.4 No worker should be allowed to work without proper protective gears.

11.5 Employees should be provided with clean protective gears. These should not be worn outside the plant but put on just before starting the work and hanged when leaving. Protective gear should be maintained in a clean condition.

11.6 All persons entering the processing areas including visitors and sub-contractors should wear clean protective gears.

11.7 Particular attention should be paid to maintenance staff and contractors to ensure that they do not carry dirt on the gear into production areas, particularly where product is sensitive to contamination.

11.8 Personal garments should not be worn over protective gear.

11.9 Clean overalls and coats, and covering to cover all hair including beards, should be worn by all personnel entering or working in the production area. Coats or overalls should be fitted with no external pockets above the waistline, to prevent the contents from entering the product, and should be securely fastened; studs or 'velcro' should ideally be used for this purpose,

11.10 Footwear should be clean and workers should have separate footwear for use in the factory, to protect against the introduction of pathogenic micro-organisms into the products such as *Salmonella spp* and *Listeria spp*.

11.11 Eating, spitting, nose cleaning or the use of tobacco in any form should be prohibited within the manufacturing, packing and storage area of the unit. Notice to this effect should be prominently displayed.

11.12 Sufficient and suitable sanitary conveniences including showers and changing rooms should be provided, maintained and kept clean in every factory. The conveniences should be properly lighted and ventilated and should be equipped with self-closing doors. Separate conveniences should be provided for each sex. No conveniences should open directly into any work room in the factory. The conveniences should always be maintained clean and in good repairs. There should be associated hand-washing facilities within the toilet area and notices should be posted requiring personnel to wash their hands after using the toilet.

12.0 CLEANING CHART

A routine cleaning chart should be drawn up and implemented. Minimum requirements for such chart should be on the lines of Annex A.

ANNEX A: ROUTINE CLEANING CHART FOR PREMISES

EQUIPMENT OR AREA	ROUTINE TO FOLLOW	FREQUENCY OF CLEANING
Drains	Remove grease and clean	Frequently and regularly
Open drainage channels	Remove any surface grit and scrub grids and channels with hot water containing detergent with a disinfectant	Frequently and regularly
Dust bins	Wash out and invert to dry	Frequently and regularly
Stores: a) walls and shelves b) floors c) utensils, supply vessels and measures	clean mop and/or vacuum clean wash down with hot water containing detergent and disinfectant Wash with hot water containing detergent, rinse and dry. If the utensils, supply vessels and measurers are used for meat, cream or egg, the hot water should contain detergent with a disinfectant	At least once a week Frequently and regularly At least once a day, more frequently if the process requires
Ventilation ducts and fans	Brush and clean outside surfaces of ducts and metal fitments	When cleaning the walls at least once a week.
Storage tanks(not completely sealed)	Drain tank, wash interior with hot water containing detergent. Rinse thoroughly and run off. When refilling first run off sufficient water to dispose of any residues	At least once every three months.
Brining tanks	Scrape, scrub and wash with hot water containing detergent.	After use

	Rinse thoroughly.	Before use
Blocking, forming and stamping machines	Dismantle, degrease and clean thoroughly	Frequently and regularly
Homogenisers	Wash working parts in warm water and detergent Rinse with disinfectant rinse with clean water Dismantle and reassemble including washing	At the close of every working period Every week
baking utensils	Clean thoroughly and scrub in water at 45°C or above, or immerse in warm water, containing detergent with disinfectant. Scour, rinse and dry.	After every period of use
Baking equipment(oven)	Clean walls with oven foams and wipe with dry cloth.	After every period of use
Conveyor belts	Clean off dropped material Clean surface of rollers	Frequently and regularly during use At least once a day
Proofing and baking tins	Clean thoroughly	Frequently and regularly during use
Dough and pastry mixers	Remove spillage and extruded food Clean thoroughly and wash with warm water containing detergent. Rinse with cold water and dry	Frequently and regularly during use At the close of every working period.
Flavours essences and colour packs	Clean the outside of containers	Each time they are used
Pastry boards and icing tables	Remove all traces of flour or sugar deposit Immerse boards in boiling water and scrub, or scrub with warm water containing detergent with	At least once a day or at the end of the process.

	disinfectant	
Knives and similar equipment	Wash in water at 45°C or above or in warm water containing detergent with disinfectant. Rinse and dry.	After use
Wooden trays	Scrub with brush in warm water containing detergent. Rinse and dry.	Frequently and regularly
Wiping materials and cloths	Keep in suitable chemical disinfectant between uses and boil after changing.	Change several times a Day

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