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China Announces New Standards on Candy and Chocolate

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Report Highlights:

On September 4, 2015, China notified the WTO of the National Food Safety Standard on Candy and chocolate (an update to GB17403), issued by the National Health and Family Planning Commission (NHFPC), as SPS/N/CHN/993. The deadline for submission of final comments to China is November 3, 2015. This standard pertains to the production of candies, chocolates, chocolate products, chocolate with cocoa butter alternatives and chocolate products with cocoa butter alternatives. The proposed date of entry is yet to be determined. Comments can be sent to China's SPS Enquiry Point at sps@aqsiq.gov.cn. The following report contains an unofficial translation of this draft measure.

Executive Summary:

On September 4, 2015, China notified the WTO of the National Food Safety Standard on Candy and chocolate (an update to GB17403), issued by the National Health and Family Planning Commission (NHFPC), as SPS/N/CHN/993. The deadline for submission of final comments to China is November 3, 2015. This standard partially replaces GB17403-1998 Code of Sanitation Practice for Chocolate Plant. This standard pertains to the production of candies, chocolates, chocolate products, chocolate with cocoa butter alternatives and chocolate products with cocoa butter alternatives. The proposed date of entry is yet to be determined. Comments can be sent to China's SPS Enquiry Point at sps@aqsiq.gov.cn. The following report contains an unofficial translation of this draft measure. In addition, interested parties are also welcomed to submit comments through the U.S. SPS Enquiry Point below so that comments can be considered as part of the U.S. Government official comment submission to the WTO:

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BEGIN TRANSLATION:

National Food Safety Standard

Code of Sanitation Practice for the Production of Candy and Chocolate
(Draft for Comments)

Issued by National Health and Family Planning Commission of the People's Republic of China

Foreword

This Standard replaces GB17403-1998 Code of Sanitation Practice for Chocolate Plant.

Compared with GB17403-1998, this Standard has the following main changes:

- Changed the title of the Standard;
- Changed the structure of the Standard;
- Added the coverage of the Standard;
- Added the Terms and Definitions;
- Added the sanitation requirements for the production process in view of the characteristics of low water activity and high osmotic pressure of candy and chocolate on the basis of GB 14881-2013;
- Added the specific requirements of product traceability and recall;
- Added the requirements for management of records and documents;
- Added Annex A: Guidelines for Microbial Monitoring Procedures at Candy and Chocolate Plant Environment;
- Added Annex B: Guidelines for Identification of Critical Control Points;
- Added Annex C: Guidelines for Division of Operation Zones.

National Food Safety Standard

Code of Sanitation Practice for the Production of Candy and Chocolate

1 Scope

This Standard provides the basic requirements and management rules of places, facilities and personnel in the purchase of raw materials, processing, packaging, storage and transportation during the production process of candy and chocolate.

This Standard shall apply to the production of candies, chocolates, chocolate products, chocolate with cocoa butter alternatives and chocolate products with cocoa butter alternatives.

2 Terms and Definitions

2.1 Critical Control Point

"Critical Control Point' refers to a point, step or process where the food safety hazard can be controlled or prevented, eliminated or reduced to the acceptable level. It is a quantifiable control point. In view of the characteristics of candy and chocolate production, the critical control point shall include the point, process or step where the physical, chemical or microbial contamination can be controlled or eliminated, of which, the raw materials are the most important object to be controlled.

2.2 Food Sanitary Indicator Bacteria

It refers to the microbe that has the ideal conditions to observe and assess the food contamination condition, and is easy to cultivate, separate and identify, and is used to reflect the food sanitary condition and the control of microbial contamination in the process of food processing. The total bacterial count and the coliform group indicators are the most common food sanitary indicator bacteria.

3 Site Selection and Plant Environment

3.1 Site Selection

It shall meet the regulations of Article 3.1 of GB 14881-2013.

3.2 Plant Environment

3.2.1 It shall meet the regulations of Article 3.2 of GB 14881-2013.

3.2.2 Plant layout and division of each functional zone shall be divided as per the production needs and based on the risk assessment, and the separation or isolation measures shall be appropriate. The pollution generating facilities such as coal fueled boiler room and waste processing pool shall have an appropriate distance from the production workshop, or warehouse or appropriate protective measures shall be taken, such as fence or fully enclosed building.

3.2.3 External entrances and exits of the production workshops shall be kept away from coal fuel yard and other pollution-generating areas, and shall not be located near to dust-generating roads. If it is difficult to be kept away, appropriate protective measures shall be taken.

4 Plant and Workshop

It shall meet the regulations in chapter 4 of GB 14881-2013.

4.1 Design and Layout

4.1.1 Plant buildings, including the design, construction and maintenance of raw materials receipt and finished products delivery zones shall be able to prevent and reduce product contamination risks, and be able to resist the effects of severe weather.

4.1.2 Workshop area shall be commensurate with the productive capacity. The interior parts of workshop shall have neat and orderly layout as per the production process and sanitary requirements and based on the risk assessment, and proper separation or isolation measures shall be taken, if necessary, to prevent cross-contamination in the production process. The space between equipment shall meet the requirements for operation.

4.1.3 Production shall be carried out in the clean zone of appropriate level. The operation zones shall be divided reasonably on the basis of such factors as different production stages and critical control points, and may be divided as clean operation zone, standard clean operation zone and general operation zone, or divided as clean operation zone and general operation zone. General operation zone shall be isolated from other operation zones.

4.1.4 If it needs to set up a non-food handling zone in the workshop area, it shall be separated from the production area.

4.2 Building Internal Structure and Materials

4.2.1 Ceiling

4.2.1.1 It is advisable to use horizontal roof or add horizontal ceiling in the production workshop. Design, construction, renovation and maintenance of ceiling and suspension shall be able to prevent the accumulation of dust, reduce vapor condensation and mildew, and easy to clean and disinfect.

4.2.1.2 The ceilings of the production zone, the buffer zone where raw materials enter into the workshop, and temporary storage site of raw materials and finished products shall be flat and easy to clean.

4.2.1.3 Air duct shall be installed above the ceiling. The pipelines such as raw materials transmission pipeline and liquid nitrogen transmission pipeline shall not be installed above the nude foods. If it cannot be avoided, additional protective devices or measures shall be used below to prevent dust scattering or failing of water droplets.

4.2.2 Wall

4.2.2.1 Structure and materials of wall and partition structure shall be difficult to hide insects, dust or condense vapor; if necessary, add appropriate protective facilities, such as metal foot pedal and bumper strip, to prevent mechanical damage.

4.2.2.2 Every plane juncture, such as between walls, walls and pillars and floors, walls and pillars and ceilings, shall have a reasonable structure, shall not leave any dead space, and shall be easy to clean. If glass is used as a partition, select the glass with smooth surface.

4.2.3 Doors and Windows

4.2.3.1 External doors and windows at production workshop and storage areas shall be assembled tightly, and may use the screen window or screen mesh that is easy to disassemble and clean, but not easy to get rusty. External entrances and exits of production workshop shall be installed with automatic closing doors, such as automatic sensors or door closers; doors may be replaced with air curtain, or the air curtain may be added near the doors.

4.2.3.2 If windowsill faces to the interior part of the workshop, its structure shall be able to avoid accumulation of dust and is easy to clean. If open windows are installed, insect-proof screen mesh that is easy to clean shall be installed. The material of screen mesh shall not cause pollution.

4.2.3.3 To select the materials of the doors and windows of one-piece plant, take into account the needs of different cleaning areas, location of production areas, internal and external orientations and other factors, and determine the opening and closing methods.

5. Facilities and Equipment

It shall meet the regulations in chapter 5 of GB 14881-2013.

5.1 Facilities

5.1.1 Water Supply and Drainage Facilities

5.1.1.1 For the production and storage areas that require dry at all times, the design and construction of interior drainage facilities shall maintain smooth drainage and dry floor.

5.1.1.2 If the workshop has drainage system, its entrance shall be installed with water-sealed floor drains or other devices that prevent solid wastes from entering and prevent foul smell from releasing.

5.1.2 Cleaning and Disinfection Facilities

5.1.2.1 Dedicated facilities for all types of contact surfaces, utensils and equipment cleaning shall be properly installed in light of the selection of materials, and if necessary, disinfection facilities such as alcohol sprinkling can shall be installed.

5.1.2.2 Cleaning and disinfection Facilities shall have certain appropriate management measures and use rules to avoid new contamination.

5.1.3 Waste Storage Facilities

Dedicated facilities and containers that have reasonable design prevent leakage and are easy to clean shall be provided to store wastes. The marks shall be clear. Such facilities and containers shall be strictly distinguished from the scrap storage facilities and material turnover facilities. Wastes shall be stored by the classification of characteristics. If necessary, temporary storage facilities may be installed at the appropriate places, and the turnover or treatment rules shall be established.

5.1.4 Personal Hygiene Facilities

5.1.4.1 Shall have personal hygiene facilities such as dedicated dressing rooms, toilets, hand-washing and disinfection facilities. Dressing room shall ensure separation of uniforms, personal clothing and other articles not allowed in the workshop.

5.1.4.2 For a freestanding plant, dressing rooms shall be located at the entrance to the plant building; for an integrated plant, dressing room can be located at the entrance to the workshop or the operation zone. At the entrance or any other necessary places at the dressing rooms, facilities for changing shoes or wearing shoe covers shall be provided if necessary. If working footwear disinfecting facilities are required, their specifications and sizes shall meet disinfection needs and shall avoid any new contamination resulting from moist shoe sole after entering into the workshop.

5.1.4.3 At the entrance to the operation zone with high cleanliness requirements, hand washing, hand drying and disinfection facilities shall be provided. The switch shall be non-manual. If necessary, at the appropriate places in the operation zone where hands are in direct contact with the products and have higher risk of microbial contamination shall be installed with fixed hand disinfection facilities, or removable hand disinfection facilities.

5.1.4.4 The toilets shall be kept clean. The door of the toilets shall not be opened directly to the production, packaging or storage area. The toilets with a transition area shall take appropriate measures to ensure that the transitional area can eliminate or avoid contamination caused by the toilet to the production area.

5.1.4.5 The faucets of the hand washing facilities shall be installed as per the number of food processing workers in each shift, and, if necessary, hot and cold water mixer shall be installed to enhance the cleaning effect. Sinks shall be made of smooth, waterproof and easy-to-clean material, and the design and construction shall be easy to clean and disinfect. The straightforward method of hand washing shall be indicated at a prominent place near the hand washing facilities.

5.1.5 Lighting and Ventilation Facilities

5.1.5.1 The plant shall have good ventilation and exhaust devices, and shall be able to refresh air and remove moisture in a timely manner. The plant built in year-round hot and humid area may use mechanical facilities to effectively control the temperature and humidity in the production environment.

5.1.5.2 The materials of air inlet and outlet mesh cover shall not be susceptible to corrosion. Ventilation and exhaust devices shall be easily removable for cleaning, repair or replacement.

5.1.5.3 If the processing needs to filter and purify air, air filtering devices shall be installed and regularly cleaned.

5.1.5.4 Dust removal facilities shall be installed if necessary in the processing area where dry powder materials are involved in production of pressed candy.

5.2 Equipment

5.2.1 General Requirements

5.2.1.1 Candy and chocolate manufacturers shall have the appropriate production equipment and facilities in accordance with the production and technical requirements, and the equipment and facilities shall be properly placed and installed according to the processes and sanitary requirements.

5.2.1.2 The design, manufacturing and installation of mechanized production systems for storage and transportation, such as gravity, pneumatic, sealed and automated system, shall be easy to maintain good sanitary conditions. With respect to the equipment, containers and tools for manual transmission, loading or storage of raw materials, semi-finished products and finished products, their operation, use and maintenance shall avoid contamination to the foods in the processing or storage, such as using the closed conveyor, or using top cover on the ingredients tanks, insulation cylinders and other storage devices.

5.2.1.3 If the production of inflatable candy, chocolate and other products uses air compressor, filtering devices shall be installed and regularly cleaned to prevent oil pollution; oil-free air compressor may also be used.

5.2.1.4 The production line shall be equipped with a metal detector or other similar equipment; at least a metal detector shall be installed at the place after the single piece of candy or chocolate is packaged. If such ingredients such as nuts or raisins are used, screening equipment or facilities removing physical contaminants in raw materials, such as sieve, iron remover, filtering mesh, blower and collection device, shall be equipped.

5.2.2 Monitoring and Inspection Equipment

5.2.2.1 Monitoring equipment shall be equipped according to the needs of environment monitoring and production line monitoring. Pressure equipment shall have temperature and pressure indicators. With respect to the equipment for monitoring, control and recording, its design, installation, operation and maintenance shall conform to the applicable state regulations. Monitoring equipment shall be regularly calibrated and maintained.

5.2.2.2 Inspection equipment shall be equipped according to the needs of environment monitoring and production line monitoring.

5.2.3 Maintenance and Repair of Equipment

5.2.3.1 An equipment maintenance and repair system shall be established; routine repair and maintenance of equipment shall be intensified; preventive maintenance shall be regularly carried out; relevant records shall be kept.

5.2.3.2 The equipment for measuring, monitoring, controlling and recording, such as pressure meter, thermometer and recorder, shall be regularly calibrated and maintained, and related records shall be kept.

5.2.3.3 Before production, check if the equipment are in normal condition. Any failure shall be eliminated promptly, and the time and cause of such failures as well as the product batches that would have been affected shall be recorded.

5.2.3.4 If online repair or equipment failure troubleshooting would contact with the food surface, the repair tools

and facilities shall be effectively cleaned; the repair tools and the dissembled parts of equipment shall be properly placed.

5.2.3.5 The mold status shall be checked regularly; if it is found that any mold is not suitable for production, it shall be replaced immediately.

6 Management of Sanitation Practice

It shall meet the regulations in chapter 6 of GB 14881-2013.

6.1 Sanitation Management Systems

6.1.1 Sanitation management systems shall cover the aspects of personnel, production sanitation, production environment, equipment and tools, cleaning and disinfection, treatment of wastes disposal, etc. The Sanitation Standard Operating Procedure (SSOP) shall be established as per the actual conditions.

6.1.2 Establishment of sanitation systems shall consider the characteristics of the ingredients of different candy and chocolate products, such as the ingredients containing dairy products, nuts and products, and oil; processes, such as heat treatment process, and existence of lots of powdered ingredients; sanitary requirements for production and storage, such as the need to control ambient temperature and humidity, etc.

6.1.3 The management systems shall include inspection and correction measures. They shall expressly provide the procedures and processes of the inspection on implementation and effect, as well as the corrective measures. If necessary, corrective measures shall be taken and verified.

6.1.4 Sanitation management scheme must have the measures to ensure its implementation.

6.2 Hygiene Management in Plant Buildings, Facilities and Equipment

6.2.1 With respect to the equipment and tools for processing, packaging, storage and transportation and the pipes for production purpose, the surfaces in contact with foods shall be regularly disinfected. Appropriate measures may also be taken to the closed pipes for production purpose, such as cleaning by pressing the pipes.

6.2.2 The cleaning scheme for the molds, conveyor belts and other facilities made of wood, stone, plastic and other non-metallic materials shall be established according to the characteristics of materials and processes, and shall be implemented accurately.

6.2.3 Movable equipment shall be checked before using; any dirt shall be immediately cleared away. The cleaned and disinfected removable devices and tools shall be put at an appropriate place that prevents contamination to the food contact surface, and shall maintain usable conditions.

6.3 Pest Control

6.3.1 If the production workshop is near the green area, an appropriate gap shall be placed between the buildings and the plants, or appropriate measures shall be taken to prevent pest from intruding into the workshop. Vegetation maintenance gap shall be determined in light of reducing pest pollution risk.

6.3.2 The pest control plan shall be implemented by professionals. If insect pest control is implemented by the manufacturer, the pest control program and procedures shall be established as per the risk of damage to the products caused by pests, and the programs for the enterprises in different geographical location shall have reasonable difference. Pest control procedures must be documented to clearly define the target pests, key areas, control procedures, control methods, schedule, and training requirements for the operators.

7 Ingredients, Food Additives and Food Related Products

7.1 General Requirements

7.1.1 It shall meet the regulations in chapter 7 of GB 14881-2013.

7.1.2 The control procedures for ingredients and auxiliary materials shall be documented to clearly provide the standards of ingredients and auxiliary materials, and the requirements for procurement, inspection and acceptance. Records shall be kept and regularly reviewed.

7.1.3 Inspection system for the received materials shall be established to examine the inspection certificates, such as the enterprise's self-inspection report or inspection report issued by any third party. If no valid inspection certificate can be provided, refer to or cite the appropriate food safety standards to establish the enterprise's acceptance criteria and inspection shall be carried out according to the standards. The materials shall not be accepted unless they have passed the inspection. The materials received but not inspected shall be stored separately, and entered into the warehouse as soon as they have been inspected and accepted. The information regarding inspection on received materials shall be accurately recorded.

7.1.4 Effective protective measures shall be taken in the ingredients inspection and transfer areas, and during the transportation of the raw materials, so as to prevent cross-contamination.

7.1.5 Ingredients, food additives and food Related Products shall be stored separately or placed by different kinds. The quality and sanitary conditions shall be inspected regularly. Warehouse delivery sequence shall follow the FIFO principle; if necessary, the delivery sequence shall be determined in line with the characteristics of different food ingredients and food additives.

7.1.6 The materials of the packages or containers containing food ingredients and food additives or in direct contact with food shall be stable, non-toxic and harmless, and shall not be susceptible to contamination, and shall comply with the sanitary requirements.

7.1.7 Buffer zone shall be set up according to the conditions of produced products and sanitary requirements. Before the ingredients are entered into the production area, it is advisable to clean, unpack or otherwise treat the outer packages or take good protective measures in the buffer zone, to reduce the risk of cross-contamination when the food ingredients, food additives and food packaging materials enter into the production area.

7.2 Food Ingredients

7.2.1 The ingredients of nuts such as peanuts, corns, milk and dairy products shall maintain dry. The temperature and ventilation shall be appropriate. The storage place or container shall not have the risk of aflatoxin contamination.

7.2.2 The ingredients requiring refrigeration or low-temperature storage shall be stored in a warehouse with moderate temperature. The quantity of delivery should be determined as per the required quantity per shift or per day. To transfer the inventory, moderate temperature shall be maintained, or the inventory shall be consumed as soon as possible.

7.2.3 The materials in bags susceptible to contamination, such as cane sugar, shall be stored in a clean and dry environment. The outer package shall not be in direct contact with the floor. During the mixture process, pay attention to preventing contamination in the outer package.

7.3 Food Additives

7.3.1 Application, calculation and weighing of food additives and nutrient supplements shall be carried out and reviewed by professionals, and shall comply with GB 2760 Sanitary Standard for Application of Food Additives, and GB14880 Sanitary Requirements for Nutrient Supplements; gum base and its ingredients shall be comply with GB 29924 Gum Base and Its Ingredients.

7.3.2 Measures shall be taken to ensure sufficient and even mixing of food additives with other materials; the remnants and tails in recycling shall be kept at a reasonable proportion.

7.4 Food Related Products

7.4.1.1 Inner and outer packaging shall be placed according to different sanitary requirements. Avoid

contamination during storage.

7.4.1.2 Cleaners, disinfectants, insecticides, lubricants and fuels shall be properly packed, shall be clearly labeled, and shall be separated from ingredients, semi-finished products, finished products and packaging materials, to prevent cross-contamination. Cleaning and disinfecting tools shall be stored in a dedicated area. Cleaners, disinfectants and other chemicals shall be managed by a special person at a dedicated area, and shall be clearly labeled and identified. When they are consumed, they shall be measured accurately and a record shall be kept.

8 Food Safety Control in Production Process

It shall meet the regulations in chapter 8 of GB 14881-2013.

8.1 Control of Production Contamination Risk

8.1.1 The main hazards arising from production processes of candy and chocolate include: hazard of microbes such as salmonella; chemical hazard such as aflatoxin, lead and arsenic; physical hazard such as metal foreign matter.

8.1.2 The sanitation standard operating procedures (SSOP) shall include the necessary contamination preventive measures for all processes, from receipt of ingredients, food additives and food related products to release of finished products.

8.1.3 Critical Control Point

8.1.3.1 Critical control points in the food production processes are the necessary steps to prevent and eliminate hazards, or reduce the hazards to an acceptable level. Critical control points can be identified by the decision tree (see Annex B) or other methods.

8.1.3.2 Critical control points in the production of candy and chocolate generally include removal of impurities, metal detection, and packaging of single piece; preliminary grinding and fine grinding of chocolate and chocolate products; and sugar cooking in the production of candy. The same hazard can be controlled by more than one critical control points, such as metal detection.

8.1.3.3 The critical control points shall have the corresponding control measures and shall be monitored. The scope, location and frequency of monitoring shall be reasonably defined; monitoring shall be well implemented; problems shall be immediately corrected. The implementation and effectiveness of control measures shall be regularly inspected; if necessary, corrective measures shall be taken and verified.

8.1.4 If it is necessary to include any reprocessing step in the production process, it shall be assessed based on the food safety risk, and the reprocessing quantity, type and conditions for application of materials in reprocessing shall be specified.

8.2 Control of Biological Contamination

8.2.1 Control of Microbial Contamination

8.2.1.1 The main sources of microbial contamination to chocolate and chocolate products include containing in the ingredients, logistics, and spreading by persons. The main sources of microbial contamination to candy include personnel, equipment, and containing in the ingredients, etc. The production process, production environment, processing steps and main sources of microbial contamination shall be taken into account. The potential risks of microbial contamination shall be identified through hazard analysis.

8.2.1.2 The microbiological monitoring program during the processing of candy and chocolate shall include microbial monitoring indicators, sampling points, monitoring frequency, sampling and testing methods, evaluation principles and handling non-conformities; and corresponding records shall be maintained. The microbiological monitoring program may be established by reference to Annex A and in line with the characteristics of production process and products. For the production process without high temperature, sampling points and monitoring

frequency shall be added appropriately.

8.2.1.3 Microbial monitoring shall include monitoring on pathogenic bacteria such as salmonella, and monitoring on indicator bacteria such as total bacterial count and coliform group. In the areas with high environmental humidity, may also monitor mildew, and yeast if necessary. For example, salmonella shall be monitored in the production of chocolate products.

8.2.2 Cleaning and Disinfection

8.2.2.1 To clean and disinfect the equipment and containers in direct contact with foods, detergents and disinfectants shall be used reasonably. The detergents and disinfectants shall conform to the relevant standards. Ensure that there is no chemical reaction on the food contact surface during the process of cleaning and disinfection.

8.2.2.2 Cleaning and disinfection procedures shall be established to ensure the effectiveness of cleaning and disinfection. When using thermal disinfection, boiling and steam disinfection shall maintain 100℃ for 100 minutes; when using chlorine-containing preparations, normally use the chlorine concentration at 250mg/L, and the tools and utensils shall be fully immersed in the solution for more than 5 minutes; when using infrared radiation sterilization, the temperature shall maintain 120℃ for 15~20 minutes

8.2.2.3 It is advisable to install certain automatic cleaning and disinfection device at the joints of production equipment and pipes. The equipment and tools for processing, packaging, storage and transportation, such as chocolate template, baking tray and recycling container, shall be regularly cleaned and disinfected, and shall maintain clean.

8.3 Control of Chemical Contamination

8.3.1 The detergents and disinfectants, insecticides and lubricants shall meet the food safety requirements and comply with the relevant regulations, and shall be used in strict accordance with the product instructions to prevent food contamination. The use of chemical agents shall be recorded in details, and the records shall be kept well.

8.3.2 If necessary, the food additives, cleaning agents and disinfectants in the production areas shall be managed by certain special persons to ensure cleaning agents, disinfectants and chemical agents would not cause food contamination. .

8.3.3 The chemical contamination program and the control procedures shall have validating and corrective measures.

8.4 Control of Physical Contamination

8.4.1 General Requirements

8.4.1.1 A management system to prevent, control and remove contamination of foreign matters shall be established. Identify sources and ways of physical contamination, identify the areas or steps susceptible to contamination, and develop appropriate prevention and control measures, based on the characteristics of ingredients, processing equipment, environment and processes.

8.4.1.2 If there is any contamination risk in on-site repair or maintenance, the running operation equipment and exposed raw materials and containers shall be isolated and protected.

8.4.2 Control of Ingredients

8.4.2.1 The equipment or measures shall be applied to effectively remove the case, shell, skin and other physical contamination of nut ingredients. The sugar dissolving process shall have filtering facilities to remove foreign matters.

9. Inspection

It shall meet the regulations in chapter 9 of GB 14881-2013.

10. Storage and Transportation

10.1 It shall meet the regulations in chapter 10 of GB 14881-2013.

10.2 The warehouse shall be equipped with facilities such as mat board to ensure that the stocks are stored without coming into contact with the floor, and its distance shall take into account the warehouse conditions and requirements of stocks. There shall be a right distance between the stocks and wall. The stack height shall keep a proper distance from the ceiling. In a warehouse that is susceptible to humid weather, the distance mentioned above shall be not less than 25cm and 20cm.

10.3 Storage and Transportation of Finished Products and Semi-Finished Products

10.3.1 The suitable storage and transportation conditions shall be selected as per the type and nature of the products, and shall be indicated in the product label, so as to maintain such storage conditions during the transportation and marketing. The temperature-controlled trucks shall meet the required temperature conditions. Typically, the storage environment of chocolate finished products shall maintain at 18~26℃, and the relative humidity shall not exceed 50%. The candy shall be stored away from light and at room temperature.

10.3.2 Substandard products shall be placed separately in a designated area, and clearly identified; shall not be released from the plant, and shall be treated in a timely manner.

10.4 Storage and Transportation of Ingredients and packaging Materials

10.4.1 Ingredients and packaging materials shall be stored off the floor and wall under appropriate conditions to ensure quality and avoid contamination.

10.4.2 Ingredients and packaging materials during transportation shall avoid sunshine, rain, high temperature, humidity and impact, and shall not be mixed with any toxic or hazardous substance in loading or transportation.

11. Product Traceability and Recall

11.1 Product Traceability

11.1.1 The product traceability system shall be established to ensure that all steps are effectively traceable, from procurement of ingredients to sale of products.

11.1.2 It shall meet the regulations of Article 11.4 of GB 14881-2013.

11.2 Recall of Product

11.2.1 It shall meet the regulations in chapter 11 of GB 14881-2013.

11.2.2 If it is found that a batch or category of products contain or would contain any hazard harmful to human health, the production shall be stopped immediately, and the sold foods shall be recalled. The involved producers, traders and consumers shall be notified, and the recall and notification shall be recorded.

11.3 The customer complaint handling mechanism shall be established. With respect to the written or oral feedbacks or complaints from the customers, the management department of the enterprise shall record them and find the cause, and properly handle them.

12. Training

It shall meet the regulations in chapter 12 of GB 14881-2013.

13. Management System and Personnel

13.1 It shall meet the regulations in chapter 13 of GB 14881-2013.

13.2 The content of food safety management system shall include the quality and safety control throughout the

processes from receipt of ingredients to release of finished products, and shall ensure that the products conform to the requirements of laws, regulations and relevant standards.

13.3 An enterprise shall have qualified and professional technicians and management personnel matching with its production scale to carry out activities regarding food safety and quality. The persons responsible for production and quality management shall not serve both posts concurrently. The operators, inspectors, plant monitors, cleaning and disinfection workers shall not be assigned to the posts unless and until they have received the training.

14. Management of Records and Documents

It shall meet the regulations in chapter 14 of GB 14881-2013.

Annex A

Guidelines for Microbial Monitoring Procedures at Candy and Chocolate Plant Environment

Note: This informational annex is formulated according to Annex A of GB 14881, and provides the factors to be considered in establishing the microbial monitoring procedures at the candy and chocolate plant environment. For the actual production environment, take into account the product characteristics and production technological level.

A.1 The sanitary indicator microbes in the testing environment, such as the level of total bacterial count, coliform, yeast, molds or other food sanitary indicator bacteria, can help assess the control of humidity in the production environment requires to keep dry. They are also often used as a validated indicator for cleaning and disinfection result, or for assessing the sanitary control of the production processes, or to identify potential sources of contamination.

A.2 Establishing the monitoring procedures for the environmental microbes shall refer to the provisions of Annex A.4 of GB 14881, and take into account:

a) Monitoring indicators of environmental microbes:

For the foods with low water activity such as candy and chocolate, the main target microbes in the environment monitoring are salmonella, and the food sanitation indicator bacteria which can show the sanitary conditions, such as total bacterial count, enterobacteriaceae or coliform, yeast and mold, etc. Total bacterial count is usually used as the sanitary indicator bacteria of general cleaning and disinfection result, and is also an important indicator bacteria to measure the production and processing capacity. Enterobacteriaceae or coliform is a kind of indicator bacteria showing the production sanitary conditions. It is used to assess the control of humidity in the production environment requires to keep dry, and to validate the general cleaning and disinfection result. Yeast and mold are usually used as the indicator bacteria for change of product or ambient humidity.

On the surfaces in direct contact with the products or the surfaces not in direct contact with the products but close to the products or product contact surface, it shall mainly monitor the indicator bacteria, such as total bacterial count, coliform, enterobacteriaceae, yeast and mold, an also salmonella, if necessary.

On the surfaces not in direct contact with the products, it shall mainly monitor the pathogenic bacteria such as salmonella to detect potential sources of contamination.

b) Sampling points of environmental microbe monitoring: The environment monitoring sampling points shall be mainly in the cleaning operation zones. Sampling point may also be set in the mixing workshop that has

high risk of contamination to ingredients.

c) Sampling and testing method: For environment monitoring, mainly use swabbing sampling. To detect the sanitary indicator bacteria, generally the swabbing area is 10cm*10cm.

To detect the pathogenic bacteria, generally the swabbing area is 50cm*50cm.

Annex A.1: Examples of Monitoring Environmental Microbe at Candy and Chocolate Plant

		Suggested Sampling Point [a]	Suggested Monitored Microbe [b]	Suggested Monitoring Frequency [c]	Suggested Limit of Monitoring Indicators [d]
Monitoring Environmental Microbe	Food Contact Surface	Hands of food processing workers; surfaces of uniforms, molds, conveyor belts and other equipments or facilities that in direct contact with the products	Total bacterial count, enterobacteriaceae or coliform, etc.	Validate the cleaning result after the cleaning or disinfection; for other purposes, validate weekly, biweekly or monthly	Total bacterial count <=100 cfu/100cm2; enterobacteriaceae or coliform <10 cfu/100cm2
	Surfaces in contact with the food, or close to the contact surface of food	External surface of equipment, surface of holder, or contact surface of control panel or parts cart	Sanitary indicator bacteria such as total bacterial count, and salmonella if necessary	Weekly, Biweekly, or Monthly	Total bacterial count <=1000 cfu/100cm2; Salmonella must not be detected
	Non-food Contact Surface	Clean the ground cleaning tools, such as broom, mop or sweeper or other cleaning tools, ditch, and floor	Salmonella	Weekly, Biweekly, or Monthly	Must not be detected
	Ambient air in the processing area	Places close to the bare products	Aerobic Bacterial Count, Yeast, etc.	Weekly, Biweekly, or Monthly	Total bacterial count <=50cfu/plate; Yeast and mildew <=15cfu/plate

[a]. Select sampling points as per the characteristics of food and production processes.
[b]. Monitor one or more than one sanitary indicator microbes as needed.
[c]. Determine the monitoring frequency as per the risk relating to the particular sampling point.
[d]. Determine the limit of monitoring indicators as per the characteristics of the products and the specific production conditions.

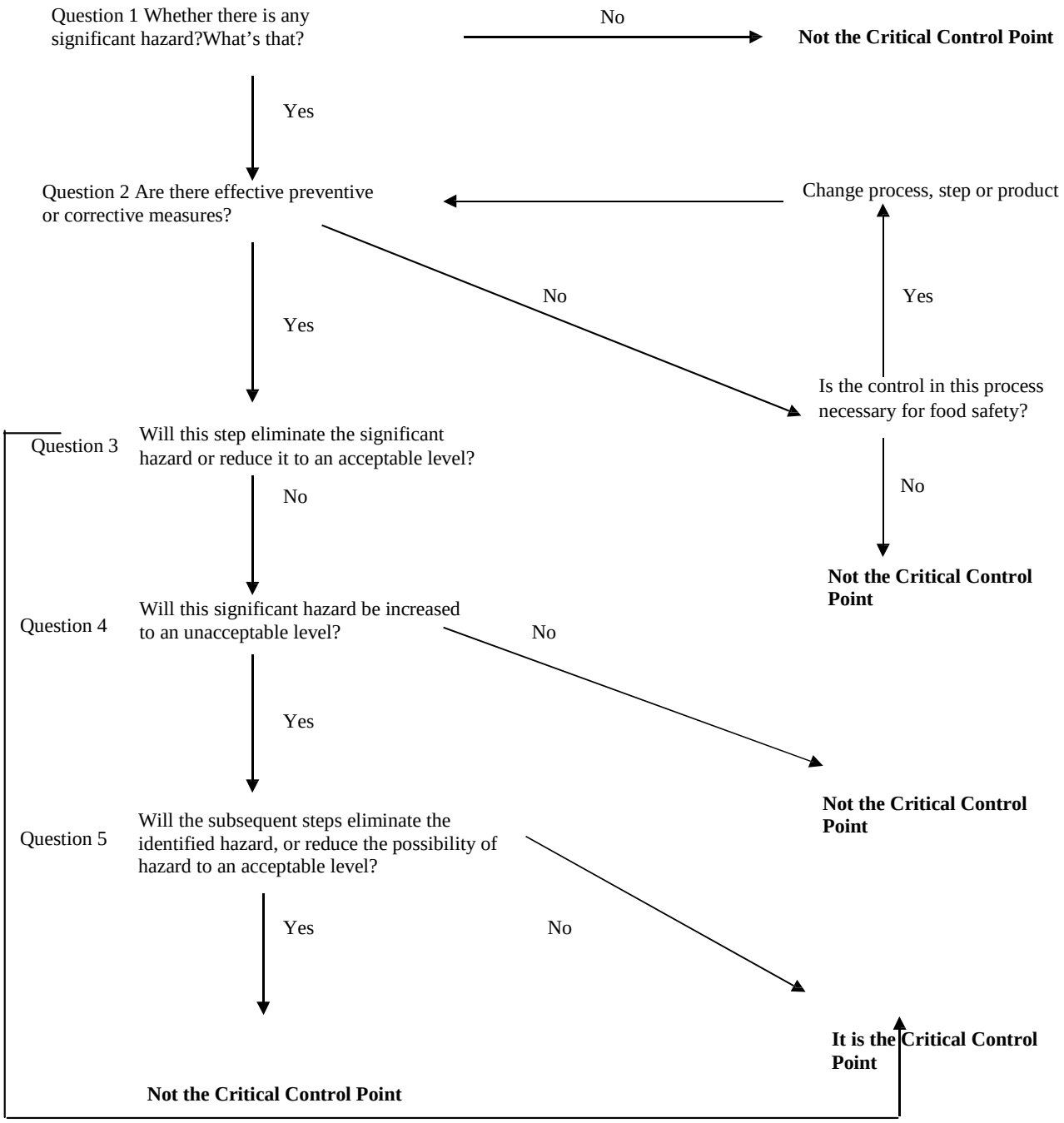
Annex B:

Guidelines for Identification of Critical Control Points

B.1 Identification of critical control points may refer to the following principles: (1) the hazard can be prevented in certain step; (2) the hazard can be eliminated in certain step; (3) the extent of hazard can be reduced to the acceptable level in certain step.

B.2 A candy and chocolate producer may identify the potential risks according to the production processes and through the hazard analysis in the biological, chemical and physical aspects, determine the control measures as per the risk extent such as possibility and severity of hazard, and use the decision tree (Figure B.1) - logical reasoning, to finally determine whether a point is a critical control point.

Chart B.1 Decision Tree for Critical Control Points (CCP) in the Production Process of Candy and Chocolate



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Annex B.1: Examples for Identification of Critical Control Points

Coated Crunchy Candy (Peanut Brittle)

Production Process/CCP	Type of Hazard	Risk Status	Control/Preventive Measures Existing, Enhanced or Controlled	Judgment	Reason
Inspection and Acceptance of Ingredients CCP1	Biological: Bacteria Fungus, Pathogens	Improper handling will cause contamination	Inspection report and sampling inspection provided by the supplier for each batch of ingredients	No	Followed by heating process, can be treated
	Chemical: heavy metal, biotoxin, and	pesticide or veterinary drug residual	Inspection report or other written certificates regarding the required items, and sampling inspection provided by the supplier for each batch of ingredients	Yes	Will the ingredients be effectively controlled Steps of eliminating hazards
	Physical: sand and stones, crust and other foreign items	Interfused by improper handling	Sampling inspection; return if unqualified	No	Follow-up process can remove it
Storage of Ingredients	Biological: Bacteria Pathogens	Poor environment will cause pest contamination or promote growth and reproduction of microbes in the ingredients	Moderate temperature and humidity	No	Followed by heating process, can be treated
	Chemical: biotoxin (aflatoxin)	Poor environment will promote growth and reproduction of microbes	Moderate temperature and humidity in warehouse	No	Follow-up process can handle
	Physical: foreign matter.	Improper control will bring in pest excrement, water or other foreign matters	Use proper storage method and keep it tightly closed	No	Follow-up process can handle
Sugar Cooking/ Filtering CCP2	Biological: Bacteria Pathogens	Improper cleaning of ingredients, containers and equipments	Properly cleaned	No	Followed by heating process, can be treated
	Chemical: no	Contained in ingredients; impossible to generate in this step	Not Increased	No	Not generated in this step; no need to eliminate
	Physical: foreign matter	Contained in ingredients	Removed by adsorption or filtration	Yes	Via equipment; can be eliminated in this step
Vacuum sugar cookingCCP3	Biological: Bacteria Pathogens	Contained in ingredients and generated from previous processes	Properly Temperature Controlled	Yes	Biological hazard may be eliminated by high temperature
	Chemical: no	Impossible	Not Increased	No	Not generated in this step; no need to eliminate
	Physical: no	Unlikely	Equipment cleaning status; controlled by sanitation standard operating procedure (SSOP)	No	Closed equipment; clean it if necessary; cleaning cycle is long and not fixed
Channel cooling	Biological: Bacteria Coliform	Unlikely	Cleaning ambient air	No	Eliminated in the previous step; not generated in this step
	Chemical: no	Impossible	Not Increased	No	Not generated in this step; no need to eliminate
	Physical: no	Brought in by food contact materials; unlikely	Conveyor belt is clean and without foreign matter;	No	Closed equipment; Closed equipment;

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			controlled by sanitation standard operating procedure (SSOP)		cleaning cycle is long and not fixed
Brittle/Crisp Making (Crisp Making/White Covering)	Biological: Bacteria Coliform	Unlikely contamination at the surface in contact with food ingredients	Controlled by sanitation standard operating procedure (SSOP), and good personal hygiene	No	Improper equipment cleaning and environment will cause contamination

	Chemical: no	Impossible	No Increase	No	Not generated in this step; no need to eliminate
	Physical: Foreign Item	Unlikely	Controlled by sanitation standard operating procedure (SSOP)	No	Can be identified and removed in the subsequent processes
Nuts roasting/ shelling CCP4	Biological: bacteria, pathogenic bacteria and parasites	Generated in ingredients and previous processes	Properly Temperature Controlled	Yes	Biological hazard can be eliminated by high temperature
	Chemical: aflatoxin	Impossible	No Increase	No	Not generated in this step; can be inactivated
	Physical: nut case, shell and skin	Generated in ingredients and this process	Add removal equipment	No	Can be eliminated in this step by equipment
Paste making/crushing CCP5	Biological: bacteria, coliform	Unlikely	Controlled by sanitation standard operating procedure (SSOP)	No	Not generated in this step; Properly cleaning of equipment is ensured
	Chemical: no	Unlikely	Regular equipment maintenance and reasonable cleaning	No	Properly cleaning of equipment is ensured
	Physical: other foreign matters brought in by grinding equipment	Waste from mechanical parts, but entry of other foreign matters is unlikely	Controlled by sanitation standard operating procedure Controlled by sanitation standard operating procedure (SSOP), and good personal hygiene;	Yes	metal foreign matters may be detected by metal detector; low possibility of contamination from operation and environment
Praline paste heat preservation	Biological: no	Brought in by food contact materials; unlikely	Controlled by sanitation standard operating procedure (SSOP)	No	Not generated in this step; Properly cleaning of equipment is ensured
	Chemical: no	Brought in by food contact materials; unlikely	Controlled by sanitation standard operating procedure (SSOP)	No	Not generated in this step; Properly cleaning of equipment is ensured
	Physical: no	Brought in by food contact materials; unlikely	Container and equipment cleaning	No	Not generated in this step; Properly cleaning of equipment is ensured
Brittle/Crisp Making (Crisp Making/ White Covering)	Biological: bacteria, coliform	Contamination at operational contact surface	Controlled by sanitation standard operating procedure Controlled by sanitation standard operating procedure (SSOP), and good personal hygiene	No	Improper operation would cause contamination
	Chemical: no	Impossible		No	
	Physical: Foreign Item	Unlikely	Controlled by sanitation standard operating procedure (SSOP)	No	This step has low risk, and the risk can be effectively controlled by SSOP
Sugar packaging	Biological: bacteria, coliform	Contamination at operational contact surface	Controlled by sanitation standard operating procedure Controlled by sanitation standard operating	No	Improper operation would cause cause contamination

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			procedure (SSOP), and good personal hygiene		
	Chemical: no	Impossible		No	
	Physical: Foreign Item	Unlikely	Controlled by sanitation standard operating procedure Controlled by sanitation standard operating procedure (SSOP),	No	This step has low risk, and the risk can be effectively controlled by SSOP
Shaping/ selecting	Biological: bacteria, coliform	Contamination at operational contact surface	Controlled by sanitation standard operating procedure (SSOP)	No	Closed production line; can be avoided by proper cleaning

	Chemical: no	Impossible		No	
	Physical: Foreign Item	Unlikely	Controlled by sanitation standard operating procedure (SSOP)	No	This step has low risk, and the risk can be effectively controlled by SSOP
packaging single piece CCP5	Biological: bacteria, coliform	Contamination at operational contact surface; environment effect	Controlled by sanitation standard operating procedure Controlled by sanitation standard operating procedure (SSOP), and good personal hygiene	No	Improper operation would cause contamination; contamination from unclean environment
	Chemical: no	Impossible		No	
	Physical: Foreign Item	Unlikely	Controlled by sanitation standard operating procedure (SSOP) and metal detector (CCP9)	Yes	This step is the last process to identify and remove physical contamination

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Table B.1: Examples for Formulation of Hazard Analysis and Critical Control Points (HACCP) Schedule

Coated Crunchy Candy (Peanut Brittle)

Critical Control Point (CCP)	Significant Hazard	Critical Limit (CL)	Monitoring				Corrective Measure.	Record	Validation
			Content	Method	Frequency	Personnel			
(1) Inspection and Acceptance of Ingredients	Harmful microbe, pathogenic bacteria, pathogenic bacteria toxin residual, pesticide residual, and contaminant	(i) Reviewed by the supplier; ii) For inspection and acceptance on each batch of received ingredients, based on the certifying documents provided by the supplier; (iii) Physical and chemical indicators and pesticide residual shall conform to the national standard	(i) Pesticide residual; (ii) Quantity of microbes; (iii) Heavy metal residual	Review the test report, and microbe examination report provided by the supplier	Each batch	Quality controller, laboratory technician	(i) Reject if fail to meet the standard; (ii) Re-inspect the supplier's quality	(i) Record of ingredients inspection and acceptance; (ii) List of qualified suppliers	(i) Inspection, acceptance and correction record of each batch; (ii) regular sampling inspection; (iii) Sampling inspection
(2) Sugar Melting/ Filtering	Water insoluble impurity	≥1.0mm water insoluble impurity	Filtering net	Check whether the filtering mesh has any blockage/ damage	4 hours/ time	Sugar melting operator	(i) Immediately remove blockage; (ii) Immediately replace the damaged filtering mesh and filter the ingredients again	Review the daily sugar dissolving log	(i) Sugar melting log; (ii) Quality irregularity, correction and preventive measures log
(3) Vacuum Sugar Cooking	Harmful microbes, pathogenic bacteria	(i) Sugar melting end temperature at 107°C, and sugar cooking end temperature at 130°C; (ii) Vacuum degree 0.06~0.07MPa;(iii) Discharging temperature 70 ~ 80°C	(i) Vacuum sugar cooking temperature and pressure; (ii) Discharging temperature	(i) Automatic temperature recorder monitors vacuum sugar cooking temperature and feeding temperature; (ii) Take into account the flavor, and conform to the requirements of disinfection	Each batch	Operators and On-site Quality Controller	(i) Immediately replace the equipment; (ii) Give training to equipment maintainers and operators	(i) On-site quality control daily log, and product inspection original record; (ii) Equipment repair and maintenance log; (iii) Employee training record	(i) Inspection, acceptance and correction record of each batch; (ii) Regular sampling inspection by the testing center; (iii) Sampling inspection
				take into account the flavor, and conform to the requirements of disinfection					by the central quality control department on a yearly basis
(4) Nuts roasting/ shelling	Harmful microbes, pathogenic bacteria and pathogenic bacteria toxin	>115°C ≥1 Minute	(i) Roasting temperature and rotate speed; (ii) Discharging temperature	thermometer/ speedometer	Continuous	Operator	(i) In case of irregularity, adjust temperature and rotate speed; (ii) Pick out the half-roasted	(i) Review the record of the last week (ii) Examine the microbial indicator for each batch of products	(i) Oven operator log (ii) Product inspection certificate

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	residual						products		
(5) Metal detection (for the steps of sauce producing and packaging singe piece of product)	Metal	< Φ2.0mm (iron) < Φ3.0mm (non-iron)	Metal	Metal Detector	Continuous	Operator	(i) Check the standard block every two hours; (ii) In case of any error, re-inspect the products made in previous two hours.	(i) Review all metal detection records of last week; (ii) Use the standard block to validate the instrument every day when the work hours begin and end; (iii) Validate by the operator every two hours	Metal Detector operation log

Annex C:

Guidelines for Division of Operation Zones

C.1 the operation zones shall be reasonably divided on the basis of such factors as cleanness requirements in the production process, plant conditions, different production stages and critical control points. Production should be carried out in the cleaning zone of suitable cleanness level.
C.2 The zones at different cleanness levels shall be separated or isolated with reasonable method to prevent adverse effect of the zone at higher cleanness level on the lower one. Non-food processing zone and food processing zone shall be strictly separated. The sanitary control measures applied in the controlled operation zone shall be different from those in other zones.

Table C.1: Examples for Division of Operation Zones at Candy and Chocolate Plant

Nature of Operation Zone	Name of Operation Zone	Description	Common Area	Notes
Controlled Operation Zone	Cleaning Operation Zone	It's the operation zone with the highest requirement of cleanness level	Chocolate ingredients mixing workshop, bare ingredients and semi-finished product processing zone, inner packaging zone, and inner packaging materials preparation room, etc.	Inner packaging zone refers to the place where the bare foods are packed up. Inner packaging materials preparation room refer to the place where the inner packaging materials that can be directly used without cleaning and disinfection process are stored, and where inner packages are removed or the packages are shaped.
	Quasi-Cleaning Operation Zone	It is the operation zone with the the requirement of cleanness level lower than that of the cleaning operation zone, but higher than that of general operation zone.	Ingredients mixing workshop and external packaging zone, etc.	Ingredients mixing workshop refers to the places where the auxiliary materials and food additives are measured and weighed, and the materials are mixed at the prescribed amount according to the processing requirements, based on the formulation and operation plan. External packaging zone refers to the places where the packaging materials that do not in direct

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				contact with the products are applied to pack up the products.
Uncontrolled Operation Zone	General Operation Zone	It is the operation zone with the requirement of cleanness level lower than that of the quasi-cleaning operation zone.	Ingredients warehouse, packaging materials warehouse, and finished products warehouse, etc.	This zone should be isolated from other operation zones.
	Buffer Zone	It refers to the buffer area which is located near to the entrance, when the ingredients, auxiliary materials and semi-finished products enter into the controlled operation zones.		Removal or cleaning of external packages may be carried out in this zone.
	Non-Food Processing Zone	It refers to the zone that is not directly used to process foods.	Inspection (Quality Control) room, office, dressing room, hand washing and sterilization room, and toilet, etc.	