Recommendations  
for Companies Developing  
a Production Control Program  
Based on HACCP Principles  

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International Finance Corporation  
World Bank Group
Recommendations for Companies
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Based on HACCP Principles

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A brochure «Recommendations for Companies Developing a Production Control Program Based on HACCP Principles» was developed by the IFC Belarus Food Safety Project.

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ABOUT INTERNATIONAL FINANCE CORPORATION

The International Finance Corporation (IFC), a member of the World Bank Group, fosters sustainable economic growth in developing countries through investing in the private sector, mobilizing capital in local and international financial markets, and providing advisory and risk management services to companies and governments. IFC believes that economic transformations should enable people to improve their living standards. IFC’s investments totaled a record $20 billion in FY2012, which targeted the realization of the private sector in creating jobs, stimulating innovations and solving the most pressing development problems.

In November 1992, the Republic of Belarus was the first of the CIS countries to become an IFC member and to obtain access to IFC’s expertise and funds to undertake economic market reforms. Mr. Petr Prokopovich, deputy prime minister of Belarus, is the manager on behalf of Belarus of the International Bank for Reconstruction and Development, the Multilateral Investment Guarantee Agency, and IFC. Mr. Nikolay Snopkov is the deputy manager.

At the invitation of the Belarusian government, IFC launched its advisory projects in Belarus in 1993 to contribute to developing the private sector and improving the business environment. Currently IFC is implementing two advisory projects in Belarus:

- Improving business regulations and promoting investment generation;
- Food safety in Belarus.

This brochure has been developed within the three-year Food Safety Project in Belarus started by IFC in June 2010. The goal is to enhance competitiveness of Belarusian companies by improving existing food safety practices. To achieve this goal, the program focuses on cooperation with all stakeholders in food safety: producers, experts, business associations, public representatives of public authorities, regulators, and consumers.

Program Objectives

1. To raise the awareness of food companies on the benefits of implementing food safety management systems. Top managers, organization specialists responsible for implementing food safety decisions as well as mass media representatives are invited to participate in conferences, seminars and training programs.

2. To establish pilot projects on implementing food safety management systems in collaboration with Belarusian experts. Pilot implementation will demonstrate the practical benefits for organizations derived from implementing food safety management systems, which will also strengthen the potential of Belarusian experts.

3. To align food safety legislation with regulations on international practices. In cooperation with IFC’s project to improve the investment climate, the government of Belarus will align Belaru-
sian legislation with directives enacted by the European Union and with other international regulations and standards if necessary.

**Expected Results**

- A larger number of companies with food safety management systems and improved investment attractiveness;
- Strengthening the potential of Belarusian experts in the field of food safety;
- Reducing the number of food-borne diseases;
- Improved sales volumes of partner companies in local and foreign markets;
- Lowered administrative costs resulting from improving the regulatory and supervisory system.

The Food Safety Project in Belarus is financed by the Foreign Trade Program of the Austrian Ministry of Finance, which aims to support the development of transition economies in Southern and Eastern Europe, thus promoting sustainable investments for economic growth, creating jobs, and improving the business climate. Support provided by local and foreign investments contributes to improving people’s living conditions and to promoting stability and prosperity in the region. The goal of the Austrian Ministry of Finance is to promote developing the private sector through capacity building, supporting small and medium businesses, attracting investments, and establishing business partnerships between Austrian and local investors.

**More information on** [http://english.bmf.gv.at/](http://english.bmf.gv.at/)
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1. INTRODUCTION

In modern conditions, food manufacturers not only produce quality products, increase export potential, but also send timely warnings and solve problems related to maintaining equipment, manufacturing, and storage facilities to comply with sanitary and hygienic requirements.

The issue of sanitary and hygienic conditions of premises is no longer emergency actions only to be taken after damage has occurred or to remedy adverse effects. Today, there is a whole complex of carefully planned measures regulated by production control programs to timely address important sanitation, hygienic and anti-epidemic issues.

When drafting a production control program, it is necessary to consider the requirements of good practices such as good manufacturing practice (GMP) and good hygienic practice (GHP) in addition to sanitary regulations and norms (SanPiN) requirements. Implementing these programs throughout the entire food chain (from cultivating and production of raw and auxiliary materials to production of finished food) will significantly reduce the risk of product contamination and prevent many diseases.

SanPiN, GMP and GHP are backbone programs used as a basis to develop a production control program and to implement a food safety management system.

A well-developed production control program enables the entire package of measures aimed at implementing sanitary and epidemiological requirements to be put in place and to identify, control and manage hazards (physical, chemical, microbiological hazards and allergens) in all phases of production, storage, transportation, and marketing of end products. A production control program aims to establish conditions for safe product manufacturing.

If an organization develops or has already implemented food safety management systems in compliance with the requirements of the standards of Belarus (STB) 1470-2012, STB ISO 22000-2006 (or with any other food safety management system), the production control program has to be tied to the existing system documents.

The objective of these guidelines is to assist food product manufacturers in developing their production control programs, considering all existing requirements and regulatory documents, and to ensure production of safe food.

These guidelines are universal and applicable in all sectors of the food industry.

These guidelines include requirements necessary to comply with the laws on the sanitary and epidemiological welfare of populations. When applying them, one should also consider health, safety, and environmental legislation.
2. GENERAL REQUIREMENTS


This ministerial decree became effective on July 19, 2012.

The production control program (PCP) is a document containing the list of significant sanitary and epidemic factors and indicators, which are priorities for the corresponding production control site, the raw materials, and the food produced at the site. The document determines specific production control measures for every critical control point; the list of measures ensuring compliance with sanitary norms and regulations, hygienic normative standards, execution of sanitary and anti-epidemic measures in processing food raw materials and food; and sets the deadlines or the frequency of the above activities.

The organization or company will assign executive officers to develop the production control program. A food safety team or the HACCP team, if any, will participate in drafting the production control program.

The production control program can be drafted in any form or as an organization standard to be approved by the director of the organization and coordinated by the HACCP team.

The PCP will be developed considering the following:

- Preventing hazards in food raw materials and food products, components, materials and products that contact them, including cross-contamination of food raw materials and food products;
- Reducing the probability of inserting hazards into food through food raw materials, components, materials and products contacting food raw materials and food through working and natural environment;
- Reducing the probability of inserting hazards into a working and natural environment through food raw materials, components, materials and products contacting food raw materials and food used in the production of food raw materials and food.

The PCP will contain the following:

- Sanitary norms and regulations, hygienic regulations, methods and techniques to control human environment factors according to the production control site’s activities;
- Layouts of industrial, auxiliary and utility rooms, buildings, and constructions;
- Technological equipment installation diagrams;
- Plans for external and internal networks of hot and cold utility and drinking water supply;
technical water supply, heating, ventilation, and sewage (as-built drawings);
• List of suppliers of food raw materials, components, materials and products contacting food raw materials and food products, packaging and auxiliary materials;
• Description of production processes, indicating their mandatory requirements;
• Routes of food raw materials, semi-finished products, end products, materials and products contacting them, production waste, employees;
• List of work being performed and services delivered by the subjects of production control, including those representing a potential danger to life and health of the population, and to food raw materials and food products;
• List of chemical, physical and biological factors in food raw materials and food products, and when processing them; a list of phases of production (critical control points) and sites of production control, and human environment for which it is necessary to conduct laboratory inspections, surveys, tests, measurements and laboratory control with an indication of the points at which sampling is conducted (laboratory and/or instrumental inspections, surveys, tests, measurements and laboratory control);
• Frequency of sampling and laboratory inspections, surveys, tests, measurements and laboratory control;
• List of possible emergencies related to suspension of production, breakdown in technological processes, and other situations threatening the sanitary and epidemiological welfare of the population, in which local executive and administrative bodies, public authorities and agencies involved in the state sanitary supervision, and about which the population of Belarus is informed as required by Belarusian law;
• List of the positions of employees subject to mandatory medical examinations and hygiene training;
• List of employees entrusted to establish production control and responsible to exercise such control as well as to develop and implement measures aimed at eliminating detected violations according to established procedure;
• Instructions of how to sanitize rooms, equipment, tare, and accessories;
• Technological instructions for individual operations and technological stages;
• List of necessary measures to ensure the safe production, marketing, storage, transportation of food raw materials and food products and to exercise efficient control over compliance with the laws on the sanitary and epidemiological welfare of the population of Belarus and with sanitary and anti-epidemic measures;
• Any other necessary information to ensure the safe production, marketing, storage, transportation of food raw materials and food products and to exercise efficient control over compliance with the laws on the sanitary and epidemiological welfare of the population of Belarus and over implementing sanitary and anti-epidemic measures.
3. ALLOCATION OF DUTIES AND RESPONSIBILITIES

To implement the production control program, an organization or company should appoint officers to be responsible for developing, updating, and implementing the requirements of the production control program as soon as possible.

The duties and responsibilities of the officers can be assigned through orders, instructions, job descriptions, roles and responsibilities matrices or by other means, depending on the organization’s existing procedures.

If the activity is critically important to the safety of food products, for example, monitoring critical control points (CCP), pest control, water and cold supply, deputies should be appointed to be responsible for these issues in the absence of the designated officers, and the scope of the duties and responsibilities of the deputies should be stipulated in their job descriptions.

Employees bear responsibility as set forth by the laws of Belarus for improper execution of their duties and responsibilities.

An example of allocating officers’ duties is in Annex 1 to the guidelines.
4. CREATION OF THE NECESSARY DOCUMENT COLLECTION

To maintain an up-to-date production control program, the corresponding list of regulations, technical normative legal acts, and other documents are necessary for manufacturers to carry out their activities to include implementing the PCP. Every company should have its own list of normative documents according to its sector and type of activity.

In order to provide necessary documents to the manufacturing facility, the company should establish a document collection and develop a procedure to manage the collection.

Documentation can be both on paper and in electronic media. Both the list of documents and original documents themselves are necessary to keep.

The document collection will include the following:
- Belarusian laws;
- Regulations by ministries and agencies;
- Technical regulations;
- Technical codes of good practice;
- Sanitary norms and regulations and hygienic regulations;
- Veterinary and sanitary rules;
- Government standards;
- Governing directives of Belarusian industries;
- Technical conditions of Belarus;
- Formulations;
- Technological instructions;
- Organization standards;
- Instructions;
- Documents of exporting countries establishing requirements for food products and procedures to ensure their safety;
- Other necessary regulations to carry out activities when implementing the production control program.

The established document collection will be updated at such times based on the signed contract of reference and information services and provision with the technical normative legal acts (TNLAs) or based on information from official Web sources such as www.tnpa.by; www.pravo.by; www.gosstandart.gov.by; www.minzdrav.gov.by, among others).

The organization or company will keep a complete list of the documentation, according to the organization’s activities that are carried out under the PCP.

An example of a document collection list is in Annex 2 to the guidelines.
5. DEVELOPMENT OF THE ORGANIZATION LAYOUT

When hosting, designing, building, reconstructing buildings and facilities intended for production of food products, the organization or company should provide for ease of operations and maintenance according to the type of manufactured products and production stages. When designing and reconstructing premises, minimizing any possibility of contaminating raw materials, auxiliary materials, and end products is necessary.

Buildings and premises, where food is produced, will be of sufficient size to accommodate equipment and materials in order to prevent any integration and contamination.

When organizing the flow of materials and personnel in the production area, preventing integration and contamination of raw materials, materials, and products is necessary.

The organization will provide personnel with necessary facilities for washing hands, changing clothes, showering, restrooms, and dining rooms; the facilities will have hot and cold water, soap or other detergents, electric hand dryers or disposable towels.

When designing and reconstructing the production area, personnel training classes and restrooms will be separated from production zones, i.e., there will be no direct access to the production area but it will be easily accessible to employees. If necessary, rooms will be designed for showering and changing clothes.

Industrial laboratories and rooms for tests will be separated from the production areas. The laboratory may be located in the production zone if undergoing technological operations in the production areas do not affect the test results, and the operations of the laboratories have no negative effect on the production of semi-finished and end products.

The organization or company will develop the following:
1. A master plan of the outside area indicating fence and supply lines; production location; administrative and auxiliary buildings; transport routes for carrying raw materials, end products, and waste; location of waste containers to accumulate production waste; location of “clean” and “dirty” areas; location of exterminating barriers and disinfection stations, if any; sewerage networks, water supply networks, and steam pipelines.

“Dirty zone” or high risk area: A physically separated zone with a risk of excremental contamination, for example, pre-slaughter cattle rest station; slaughter floor (skinning section, gutting room); skin salting section; enteral section; and manure storage area.

“Clean zone” divided into three hygienic status levels as follows:
Good manufacturing practices zone: a zone with minimal hygienic manufacturing practices, where closed food production processes are performed, for example, a milk processing room, a flour milling shop, a sugar confectionery shop.
Special attention zone: a refrigerated zone designed according to high standards of hygiene in which practices nullifying pathogenic microorganism contamination of products are applied to employees, ingredients, packaging, and the external environment, for example, a deboning section.
High risk zone: a physically separated refrigerated zone designed according to high standards of hygiene in which practices preventing pathogenic microorganism contamination of products are applied to employees, ingredients, packaging and the external environment, for example, ready-to-eat products.

2. The layout of the production areas will indicate the transportation routes for raw materials, auxiliary materials, end products, production waste, location of waste containers, and the personnel flow chart, both forward and backward. The layouts of the production areas will also indicate the locations of production equipment, sanitizing stations, the restrooms, washstands, service-utility zones, areas of possible contamination of raw materials and end products with lubricants and refrigerants, ventilation, sewage, water supply networks, steam supply networks, and chilling systems.

All areas shown in the layouts with have unique identification to avoid possible confusion as to their purposes. The identifiers can be digits or words.

For example, “Raw Material Preparation Room” or “Cooling Chamber No. 1.”

Keep in mind that the forward directing principle should be applied to the designed traffic flows. Employees in the “dirty zone” will not attend to the “clean zone.”

All as-built drawings will be developed to scale (preferably a scale of 1:100), facilitating a hazard analysis.

All developed layouts will be checked periodically and updated when necessary. Each layout will be dated and signed by the verifier.

Examples of the as-built drawings are in Annex 3 to the guidelines.
6. ENGINEERING SYSTEMS
REQUIREMENTS

Supplying and distributing networks of engineering services inside and around technology and storage areas will be designed so as to minimize product contamination risks. The quality of the engineering services will be monitored to ensure minimal contamination risk.

Utility connections to include external and internal pipelines of utilities, hot and cold drinking water supply, technical water supply, heating, ventilation and sewage will be designed according to legal requirements.

Drinking and technical water supply will be separated and clearly labeled.

The drinking water supply will meet production process requirements. For equipment to store, distribute and control, if necessary, the temperature of the supplied water will be designed to comply with water quality requirements.

Water used as an ingredient of the product, including steam or ice (and culinary steam), or water contacting the product or surfaces where the product is placed will comply with drinking water quality requirements.

If tap water is chlorinated, checking the residual chlorine level is necessary to ensure that water for consumption does not exceed the level set by corresponding regulations.

Water used for cleaning or in places where there are risks of indirect contact with the product, for example, jacketed vessels and heat exchangers, will comply with drinking water quality requirements.

Pipelines for hot and cold water supply, technical water supply, detergent and disinfectant solutions, and ice water will be of different colors according to the TNLA requirements.

The sewage system will meet the TNLA requirements.

The internal domestic sewage system will be separated from the industrial sewage system.

Laying sewers through facilities designed for storing raw materials, auxiliary materials and tare, production and storage of food is prohibited.

All domestic and industrial sewage systems will be closed, and discharge of sewage water from production equipment on the floor, open trays and drains is prohibited.

Installing storm water drain suspension systems over production equipment, work stations, storage facilities and in places where leaks can endanger food safety is prohibited.

Drainage devices will comply with the intent of their design. They will be designed and assembled in such a way to avoid contamination risk. If drainage channels are fully or partially opened, ensuring sewage waters do not flow from a dirty zone to or towards a clean zone is necessary, for example, to the side where food is processed. (Wastewater can increase risks to the final consumer.)
When designing ventilation systems, preventing air flow between zones of different hygienic status is necessary. Ventilation systems will be accessible for cleaning, filter replacement, and maintenance. Ventilation system filters will be designed to be located as close to their usage point as possible.

Ventilation (natural or mechanical) will remove excess or unwanted steam, dust and smell, and facilitate drying after wet cleaning of the facilities, equipment, etc.

The production control program will include fitted drawings indicating marked input points of the utility connections of the drinking water supply and ventilation in the production and storage zones, and filter locations in the ventilation systems. These locations will be numbered individually for every utility. Numbering is necessary to document the programs of air and water sampling at specific points of the production and storage zones, sanitation of the ventilation grills, examination and maintenance or replacement of ventilation system filters.
7. DEVELOPMENT OF THE LIST OF EMERGENCIES

An emergency is an unforeseen circumstance disrupting the organization’s routine operations. Possible reasons for emergencies are as follows:

- Equipment failure;
- Safety violations;
- Power outage;
- Steam turned off;
- Water turned off;
- Fire;
- Natural disaster.

Depending on their origin, emergencies can be categorized as external and internal.

External emergencies are situations that do not result from the employee activities or the organization’s production operations.

Internal emergencies are situations that result from employee activities; the organization’s production operations; violations of technological processes; wear and tear of production equipment, machines, and mechanisms; preventive maintenance and repair; operator human error; and design defects.

To ensure timely response to emergencies and to prevent possible accidents at the company, the following actions are necessary:

- Identify places where emergencies are most likely to occur;
- Develop a course of action to prevent and reduce the impacts on the safety of the manufactured products;
- Analyze and check whether personnel are trained to localize and eliminate the consequences of emergency situations;
- Define the sequence of actions to localize and eliminate the consequences of emergency situations;
- Analyze the reasons for accidents and define the procedure to develop measures to eliminate such causes.

There are good reasons to elaborate on the procedure to be applied in case of an emergency or accident; the procedure will contain the following information:

- Types of possible emergencies and accidents;
- Sequence of actions of personnel in case of an emergency or accident (evacuation procedures, escape routes, shelters, etc.);
- Things to be done with raw materials, end products, semi-finished products that are subject to the situational impact (control, removal, recycling, rework, etc.);
- Personal responsibility for decisions and actions in case of an emergency or accident;
- Procedure and terms of reporting a list of authorized bodies and organizations interested in this information.

An example of emergency management is in Annex 4 to the guidelines.
8. DEVELOPMENT OF THE SANITARY AND HYGIENIC MEASURES

In today's market conditions, the formula to successfully promote food raw materials and food products for the consumer is the safety, perfect quality, high technological properties and taste of the food. Manufacturing products meeting these requirements largely depends on many factors, such as the sanitary and epidemiological status of the production facility, raw material safety, quality indicators, and processing technology. Sanitary and anti-epidemic measures in food production carried out in the wrong way can cause intensive microbial contamination of the product and fast spoilage, consequently harming public health, causing economic damage, and ruining the image of the organization or company.

Impeccable sanitary facilities can be established with the right choice of efficient techniques and means of disinfection, considering the nature and degree of soiling, type of equipment and the conditions of the food production process.

To comply with the proper sanitary and anti-epidemic regime, food manufacturing facilities will develop multiple disinfection activities.

Disinfection or decontamination is killing saprophytic microorganisms (e.g., pests of a particular production that spoil raw materials, semi-finished and finished products) and pathogenic and conditionally pathogenic microorganisms – the infectious agents of foodborne infections.

According to the Belarusian “Law on Sanitary and Epidemiological Well-being of the Population” (January 07, 2012, No. 340-3), disinfection, disinsection and deratization are measures aimed at the extermination or elimination of infectious agents or carriers.

**Disinfection** are various activities aimed at exterminating or eliminating infectious agents on objects in an ambient environment.

**Deratization** are various activities aimed at exterminating or eliminating rodents of epidemiological, sanitary and hygienic importance.

Disinsection are various activities aimed at exterminating or eliminating arthropods of epidemiological, sanitary and hygienic importance, and aimed at protecting people from bloodsucking insects and ticks.

These activities will be carried out systematically according to sanitary requirements established for each industry.

Disinfection of equipment, accessories, tare, production and industrial and employee facilities of food company's is a preventive measure to prevent the contamination of food raw materials and food products by microorganisms. There are three types of disinfection: routine, preventive and scheduled preventive.

**Routine disinfection** is daily, at the end of the workday and during the day, if necessary.

**Preventive disinfection** is monthly.

**Scheduled-preventive disinfection** is annually (may coincide with routine or capital repairs).

**Emergency disinfection** is organized under epidemiological indications, for example, in
case of suspected food poisoning, infectious diseases in employees or in case of procurement of infected raw materials, semi-finished products, tare, etc.

The disinfection schedule will provide the frequency, methods and cycles of disinfecting the main production and auxiliary facilities, vehicles, work clothes, and other objects.

An example of applied disinfection methods is in Annex 5 to the guidelines.

Keeping the sequence of cleaning phases is necessary as follows:
1. **Mechanical cleaning** is collecting garbage and waste and cleaning with scrapers and wipes.
2. **Preliminary cleaning** is rinsing surfaces by water (recommended temperature is 35-45 °C) to remove lightly adhesive and water-soluble pollutants.
3. **Basic cleaning** is removing remaining dirt with the solutions of suitable detergents.
4. **Rinsing** is removing remaining dirt and detergents with drinking water.
5. **Disinfection** is exterminating microorganisms by various means.
6. **Final rinsing** is removing residual disinfectants with drinking water.
7. **Drying** is removing water to prevent microbial contamination risks and corrosion.

The primary objective of stage one to stage four is to remove pollutants, prevent the formation of biofilms and prepare the equipment and surfaces for disinfection. All of this can be accomplished manually, semi-automatically or automatically.

**Cleaning Out of Place or COP** is dismantling parts and components, soaking, brushing or cleaning with cloths.

**Central High Pressure Cleaning or CHP** is cleaning with high pressure (15 to 120 bars) based on removing pollutants by transverse motion of jetted liquid, a technique requiring a small volume of detergents.

**Central Low Pressure Cleaning or CLP** is pressurized rinsing (below 5 bars) requiring detergent solution sprayed intensively; thus, the quality of the detergent becomes an important element.

**Cleaning In Place or CIP** is washing with acid and alkaline solutions, disinfection, and neutralization based on circulating the washing solution in a closed circuit of the system.

**Central Foaming System or CFS** is a foam washing system mainly used for sanitary purposes; a stable foam is applied to all surfaces to ensure prolonged contact between the detergent or disinfectant and the treated surface.

The criteria to evaluate the quality of cleaning are as follows:
- Visual cleanness;
- Absence of residual impurities and components of detergents and disinfectants;
- Results of microbiological or chemical swab control.

To improve the efficiency of disinfection, a number of factors affecting the quality of the disinfection measures are necessary to take into account.

One of the factors is the material from which the objects of disinfection are manufactured (production equipment, tools, working surfaces). Cleaning equipment with couplings, cracks or holes is difficult. Cleaning and disinfecting substances may not fully penetrate all parts of the equipment, which reduces the efficiency of the substances.

The second factor is the level and type of microbial contamination. Equipment with a high level of contamination requires longer treatment. Organic pollutants can contribute to the formation of biofilms and reduce the activity of the applied disinfectants.
The third factor is the type and solution concentration of the active substance, and its exposure time. Usually, the higher the solution concentration of the antibacterial agent, the less time is required for adequate disinfection. The exception is iodine agents and alcohols.

Other factors are also important to take into account such as temperature, pH, water hardness and the presence of other chemical compounds that can affect the efficiency of disinfectants.

For disinfection procedures to be conducted efficiently and to ensure necessary cleanliness of the equipment, the organization or company will validate its washing and disinfection processes applied to the production equipment and accessories.

**Validation** is obtaining proof that the control measure or the combination of control measures can control hazards within the set thresholds, if the measures are taken correctly.

CAC/GL 69-2008 “The proposed draft of the guidelines to validate food safety control measures.”

Food companies will interpret the validation as documentary proof that the technique, process, equipment, material, operation or system comply with the set requirements and their application brings the actual expected results.

Validation is an important part of the system ensuring provision and control of the quality and safety of manufactured products. Validation itself cannot improve the quality of products. Validation results can either increase the degree of quality assurance and product safety or accentuate the need to improve the production environment.

To organize preventive or scheduled-preventive washing and disinfection, the organization may outsource this process to third-party organizations specialized in this field. In such a case, there will be specifications for delivering such services.

To manage the disinfection program, the company will assign a responsible officer or team to control the sanitary status of all company sections daily and analyze the collected data quarterly. The results will be discussed at meetings in presence of department managers and other responsible officers. The decisions to correct the program can be made if necessary.

The developed program will be updated continually and controlled as to whether the program complies with the conditions of the organization or whether the program is efficient.

The program will include the following:

- The list of applied detergents, cleaning agents and disinfectants indicating a minimum week’s supply as well as safety information on handling and applying the cleaning agents and disinfectants;
- The required amount of detergents, cleaning agents and disinfectants should be based on the total floor space of the facility, turnaround of transports, and working clothes. When calculating the total floor surface to be disinfected, the space of the floors, walls, and ceilings of the work areas and other rooms should all be taken into account;
- The method of preparing working solutions (this can be an independent user manual based on the manufacturer’s recommendations);
- The procedure to control residual detergents and disinfectants;
- Cleaning and sanitation plans for the utility, production, auxiliary, and storage areas, and areas to be cleaned before, during and after the workday;
- Equipment sanitation plans;
- Cleaning and disinfection instructions and list of instructions;
- Cleaning facilities list;
- Description of cleaning and disinfection process of individual production areas (schedule, technique);
8. DEVELOPMENT OF THE SANITARY AND HYGIENIC MEASURES

- Cleaning plan to meet hygienic requirements (cleaning to be made before, during, and after production operations);
- Cleanliness inspection plan (visual, chemical or microbiological cleanliness);
- List of responsible persons.

The organization or company will use detergents, cleaning agents and disinfectants approved for use by Belarusian law according to their enclosed user guide.

Detergents, cleaning agents and disinfectants will be stored in their original labeled manufacturer’s packaging in specially designed rooms or special cabinets and in the environment regulated by the normative documents for every agent.

Storing detergents, cleaning agents and disinfectants together with food raw materials and end products is prohibited.

All packaging labels will be maintained for the entire period of applying the disinfectants at the facility.

To prepare working solutions of disinfectants, employees will wear individual protective gear according to the manufacturer’s instructions.

The solutions of disinfectant agents will be provided to the production facility in a volume not to exceed the daily demand considering the volume of solutions used by each production line.

Contamination of equipment, food raw materials, accessories, and end products in the process of cleaning the production facility must be avoided.

Janitorial supplies for cleaning various areas will be separated and labeled to indicate the purpose or to be distinguished from other janitorial supplies by color; such accessories will be maintained in different rooms or specially allocated areas.

To sanitize janitorial supplies, the organization will allocate special rooms with washing tubs and drainage units supplied with hot and cold tap water, and equipment for drying janitorial supplies.

After cleaning, all janitorial supplies will be rinsed with water and detergents, and disinfected by agents permitted for use by Belarusian law; the agents will be applied according to their user guides; afterwards, the janitorial supplies will be dried and kept clean.

Every type of equipment will have its own developed detailed instruction of how to disassemble and clean it, indicating the detergents, disinfectants and techniques to be used.

The choice of detergents and disinfectants will depend on the type of pollution and peculiarities of the surfaces to be cleaned. Acid detergents are the most efficient to remove inorganic pollutants, while alkaline detergents are the most efficient to remove organic dirt.

Adhering to certain conditions for efficiently applying disinfectants is necessary as follows:

- Apply chemical disinfectants in liquid form, dissolved in water, either in the form of emulsion or suspension;
- Strictly comply with certain concentrations of working solutions of the disinfectants;
- Ensure even application of disinfectants on surfaces with maximum penetration or contact;
- Keep certain exposition timing.

Only professional janitorial supplies recommended for the food industry will be used.

Janitorial supplies will meet the following requirements:

- Be ergonomic and modern by design and technical parameters;
- Have clear labels (floors, walls, equipment) indicating the room, purpose, or which janitorial supplies have different colors depending on purpose of use;
- Use separate janitorial supplies to clean drains, pipes, and toilets;
• Be used strictly for intended purpose; be disinfected, cleaned and dried after use; automatic washing and drying machines can be used for this purpose;
• Be maintained in cabinets, on shelves or on trolleys in special rooms; janitorial supplies for cleaning toilets will be stored to restrict free access.

**Janitorial supplies will be replaced in the following cases:**
• Brush fibers are knotted or pilled;
• The brush is decolorized and its original color is not restored after washing;
• The brush has considerable visual damages;
• The brush handle is broken or has cracks.

Tools and instruments will be chosen considering the hygienic requirements. They will be maintained in this condition so that the tools and instruments do not become sources of contamination due to foreign objects.

**A drainage hole cleaning procedure will be in place to include the following actions:**
• Removing and mechanically cleaning the grills;
• Rinsing with water and highly concentrated detergents;
• Using designated janitorial supplies.

Sanitation of trolleys and loaders of technical equipment is also expected. All cleaning and disinfection procedures will be validated.

*An example of the working program of cleaning and disinfection is in Annex 6 to the guidelines.*
9. DEVELOPMENT OF PEST CONTROL MEASURES

Pest control is a target-oriented integrated system to control and manage the number of problematic pests.

Pests are any organisms harmful to human health and causing material damage or discomfort. Usually these are small rodents, including mice and rats; insects, including flies, cockroaches, ants; birds, and the like.

Pest control has a wider scope than disinfection, disinsection, and deratization. Pest control has a series of measures to reduce the number of pests to an acceptable level in a particular area to prevent harm. All pest control measures will be taken according to valid technical nominative legal acts or TNLAs.

Organizations or companies with an implemented HACCP system and engaged in storing, processing, and marketing food products will develop their own pest control programs.

Pest control programs will take into account that human environment means not only neighboring typical rodents subject to deratization and insects subject to disinsection but also other vertebrata: birds, cats, dogs, raccoons, foxes, shrewmice, etc. The scope of disinsection and deratization activities is an integral part of pest control.

9.1 General principles of a pest control system

A pest control system has a number of mandatory and sequential actions in which the result of the first action affects several actions that follow, and they may not be retracted or significantly modified in their sequence.

The first action is visual or instrumental examination to determine the species of the pest, its distribution range and appearance probability. Then it is necessary to identify habitat, food and breeding places of the pests, and how the pests get into the facilities and migrate there.

The second action is developing special recommendations for the company’s areas and buildings to implement pest control measures indicating the scope of the work and timeline.

The third step is organizing the recording and monitoring: pest monitoring with special detection tools applied in places of pest appearance and habitation, keeping the network of the detection tools in constant preparedness, assessing the pest population indicators, the ecological phase of its development and migration.

9.2 Basic pest control activities

An organization or company implementing a pest-control system will finance the system and take active measure to protect the company’s buildings.
A pest control system is based on the project developed by specialists. A pest control program is developed for every site individually, considering the peculiarity of the production, local specifics, climate, flora and fauna, and pests. The program will include the company’s ongoing preventive measures, primarily ensuring the following efficiency of pest control measures.

Responsible officers assigned by the company’s management and other employees will actively and continually support the protective measures that have to be taken in their working sequence. Personnel responsible for pest control will monitor the population and placement of parasites by improving and developing the pest control and preventive measures. The pest control system documentation is a tool to analyze the situation and improve the measures. The documentation will include a map of the facilities and layout of the rooms indicating numbered points where pest control and extermination tools are placed. In addition, tables will be filled with data on the presence and number of pests; and summary statements on the work performed and on the efficiency of the measures taken will be drawn up as well.

Along with an internal audit, an external and independent audit will be conducted by third-party experts. The annual report will be drawn up according to a set template. The report will provide objective data about the status of work and the results of inspections and audits with analytical findings and suggestions about the prospects of the company and the following actions.

Special attention is given to applying selective and “green” methods of pest extermination and agents inside the buildings and to protecting the buildings from pest penetration from the outside. Pest control activities are usually outsourced to specialists trained in the use of disinfectants and pest ecology of the species, which the pest control measures target.

All pest control and extermination means and agents are used only if they are approved for use by the Belarus Ministry of Healthcare.

Control over the results of completed work includes the following:

- Internal control, exercised by representatives of those who did the work or the customer’s representatives;
- External control, exercised by authorized representatives of government agencies for sanitary and veterinary control.

Basic preventive and extermination pest control activities will be undertaken according to valid TNLAs.

Sanitary regulations and standards No. 21-112-99 (“Normative indicators of safety and efficacy of disinfectants”) have been approved by the Chief State Medical Officer of Belarus in Decision No. 2 (dated January 6, 1999) issued with changes approved by Directive No. 12 (dated February 4, 2009) of the Belarus Ministry of Healthcare.

Veterinary and sanitary rodent control regulations were approved by Directive No. 15 (dated February 15, 2006) of the Belarus Ministry of Agriculture and Food, with the amendments and additions approved by Directive No. 82 (dated November 18, 2010) of the Belarus Ministry of Agriculture and Food.

Sanitary regulations and standards “Requirements for disinfection, disinsection and deratization activities” were approved by Directive No. 24 (March 21, 2013) of the Belarus Ministry of Healthcare.

An example of applied pest control methods is in Annex 7 to the guidelines.
10. DEVELOPMENT OF PERSONAL HYGIENE REQUIREMENTS FOR COMPANY EMPLOYEES ENGAGED IN PRODUCTION, MARKETING, STORAGE, TRANSPORTATION OF FOOD RAW MATERIALS AND FOOD PRODUCTS

For organizations engaged in production, marketing, storage, transportation of food raw materials and food products, especially important is to follow the rules and requirements of personal hygiene stipulated in mandatory sanitary regulations and standards applicable to the organization’s industry. Employees play an important role in maintaining production hygiene. By touching food raw materials, food products, production equipment and production implements, they can cause contamination of the above by infectious agents, which is why every employee will have certain personal hygiene skills.

Personal hygiene are hygienic requirements to maintain cleanliness of an employee’s body and clothing and the set of rules on how to handle food raw materials and food products as well as the employee’s health status in which he or she is not the source of infection that may cause disease or food poisoning in food product consumers.

Personal hygiene includes the following:

- Personal behavior;
- Exterior appearance;
- Cleanliness and neatness of work clothes;
- Washing and hygienic cleaning of hands;
- Health status;
- Teaching hygienic skills.

The organization will properly formulate and document requirements for the personal hygiene of employees, working clothes, periodic personnel training, tools and agents for hand washing and hygienic scrubbing, and health status.

A personal hygiene employee management plan or program will be developed and approved by the head of the organization. The plan will determine the goals, tasks, methods and means, frequency, supervisor or manager, and responsible officers.

An example of the personal hygiene management program is in Annex 8 to the guidelines.

In production process rooms, any worker activities that could contaminate food are prohibited. Such activities are eating, smoking, chewing (chewing gum, sticks, betel, etc.) or unhygienic habits, for example, spitting.
Employees may not wear jewelry and wrist watches. Foreign objects may not be in pockets (e.g., pins, buttons, rake-combs, mobile phones, etc.).

To prevent hair and dandruff from falling on food raw materials and food products, employees will completely cover their hair with caps. Male employees who directly contact food raw materials or food products should not have a mustache or a beard; however, special hairnets can be used to completely cover a mustache and beard.

An employee responsible for production, marketing, storage, transportation of food raw material and food products will wear only special sanitary clothes (overalls) at the workplace. Overalls may include a robe, jacket and pants, apron, headwear, shoes, gloves, sleeve protectors, face mask, etc.

The set of overalls will be determined according to the type of production and performed operations. Overalls will be made from an easily washable fabric. In production areas where there is direct contact with food raw materials and food products, overalls will have no pockets and buttons.

Overalls of employees responsible for cleaning, maintenance or handling operations will differ in color from the overalls of other employees.

Overalls will always be clean, be able to fully cover personal clothes and hair, and be well buttoned or zipped.

The number of overall sets per employee and the rules and frequency of changing overalls will be justified and documented.

The company may organize or equip special rooms (outside production workshops) to wash the overalls, with special conditions provided: adequate performance of washing machines, drum drying, and disinfection, if necessary. The company will develop washing and repair procedures for sanitary clothes and overalls.

Reusable overalls will be ironed with high temperature to ensure a tidy appearance and to exterminate the majority of microorganisms.

If sanitary clothes are washed by a specialized company, the contract will set the customer’s requirements to the quality of service to be delivered. Specifications or documented requirements should be developed for this service.

*An example of the specifications in Annex 9 to the guidelines.*

Clean overalls will be maintained separately in designated areas (lockers, boxes, shelves). Specific overalls given to an employee will be maintained separately from his or her civilian clothes.

An employee will put on the overalls after the washing and hygienic processing of his or her hands before the work shift starts; the overalls will be taken off after the work shift ends.

Putting overalls on an otherwise unclothed body is prohibited.

Footwear will be closed, made from easily washable material, and will tolerate washing, disinfection and drying. Special areas and equipment will be assigned for this, with special instructions developed.

When getting ready for a shift, an employee will do the following in this sequence:

- Take off outdoor footwear, clothing, jewelry, wristwatches, upper garments, leisure wear;
- Take hygienic shower;
- Put on personal clothes;
- Wash and hygienically clean hands;
- Put on overalls.

An employee will have short nails without any nail polish.
Washing hands in production sinks designed to wash tools and food products is prohibited. Sinks for washing hands will be equipped with a batcher and dispenser (for liquid soap and disinfectant for hygienic hand cleaning) to avoid contact with hands; also available will be disposable towels, trash cans with pedals, and instructions on proper hand washing and hygienic cleaning. Textile towels (including individual towels) are prohibited.

Every employee must know that hands have to be washed and hygienically cleaned by disinfectant:

- Prior to work;
- When dirty;
- After using toilet facilities;
- Each time upon leaving the production room and coming back to the production area;
- After working with food raw materials or outer packaging;
- When changing production operations (such as changing from food raw materials to finished food);
- After sneezing, nose blowing, coughing, wiping eyes, combing hair;
- In all other cases after contacting any objects that could contaminate hands.

10.1 Requirements for employee health status

In case of signs of gastrointestinal problems, fever, suppuration of an open-skin fragment and symptoms of other illnesses, a company employee engaged in production, marketing, storage, transportation of food raw materials and food products will inform his or her supervisor of this condition immediately.

In case of catarrhal signs (running nose, coughing, sneezing, sore throat), empyesis, abscess or furunculosis, employees may not process food products.

In case of non-complicated maim or burn, the wound will be treated according to instructions, and the worker will wear a finger stall or gloves on his or her finger or hand. Working with an open wound is prohibited.

Every production section will be equipped with a first-aid kit according to the requirements of the Belarus Ministry of Healthcare. Medicine in the first-aid kit will be maintained in proper storage conditions; the shelf life will not be expired.

A person will be assigned to be responsible for the timely stocking of the first aid kit, and for training in first aid measures.
11. ORGANIZING EMPLOYEE MEDICAL EXAMINATIONS

Company employees engaged in production, marketing, storage, and transportation of food raw materials and food products will undergo mandatory medical checkups under procedures set forth by the Belarus Ministry of Healthcare, if employees perform the following work:

- Work related to exposure to harmful or dangerous factors of the production environment or to the severity and intensity of the work process;
- Work requiring mandatory medical examinations;
- Work enabling contamination by microorganisms from food raw materials and food products.

If an employee has any degree of risk (e.g., harmful working conditions, contact with food), his or her medical examination will be arranged to meet all corresponding requirements.

According to currently valid instructions “On mandatory medical examinations of workers” (Directive No. 47 of the Belarus Ministry of Healthcare, dated April 28, 2010), preplacement, periodic and extraordinary medical examinations to prevent infectious and parasitic diseases are mandatory for employees in the following industries or jobs:

- Food industry;
- Dairy farms;
- Industrial apiaries;
- Dairy kitchens and distribution outlets;
- Food base complexes and food warehouses;
- Industries involving transportation by any means of transport;
- Industries involving sanitation and repair of tools and equipment;
- Catering, retail, cafeterias, canteens, food units;
- Contact with food during food production, storage, sale, delivery.

The purpose of the examinations is to prevent ill people from working who have infectious diseases, pyodermatitis or helminthic diseases that can cause mass infection.

Preplacement medical examinations of new employees will be conducted according to the appointment card filled out by the employer; an appointment card will indicate the industry, profession, hazardous or dangerous factors of the production environment and the severity and intensity factors of the work process.

Periodic medical examinations to prevent infectious and parasitic diseases will be organized once a year.

Extraordinary medical examinations of employees are conducted during work activities as initiated by a healthcare organization if there is a threat of an outbreak or spread of mass infectious diseases.
Every year, an employer will make a list of the positions of the employees that will undergo medical examinations. The list will include the positions of employees who contact food directly. Based on the list and the schedule of medical examinations, the employer will make a list of employees subject to periodical medical examinations. This list is filed with the healthcare organization 15 days prior to the beginning of the periodic medical examination. Periodic employee medical examinations will be accomplished by December 1 of the current year. Persons who fail the medical examination may not have access to production, according to Belarusian law.
12. FLOWCHARTING REQUIREMENTS

Process flowcharts will be developed for all groups of the manufactured food products. Process flowcharts are the basis for analyzing whether hazards can emerge or increase or cause hazards in food products.

Flowcharts will contain the following information:
- Sequence and interrelation of all production process stages;
- Stage when food raw materials, auxiliary materials and semi-finished products are introduced to the production process;
- Stages of rework or reuse, including return loops;
- Stages of production or removal of end products, intermediate products, byproducts or waste;
- Stages of possible technological process delays;
- Outsourced or contracted stages of the process;
- Stages of possible contamination of food raw materials, semi-finished food or finished food products by lubricants and refrigerants.

A production process flowchart will be developed in cooperation with the HACCP team. The correctness of the flowcharts will be verified by checking them onsite (in production areas where the product is manufactured) and as needed (when the assortment of manufactured products is changed or the production process is altered, etc.), but at least once a year.

The organization will develop process flowcharts considering the following documents:
- Operational procedures developed for every book of recipes and technologies agreed upon and approved in due order;
- STB ISO 22000, STB 1470-2012 or other food safety management systems.

Production process flowcharts will include the following key stages of the production process:
- Incoming control of food raw materials and auxiliary materials;
- Preparing core food raw materials and auxiliary materials;
- Description of the main production stages (filtering, pasteurization, sterilization, packing, etc.);
- Preparing processing deficiencies for rework;
- Packing end products indicating special conditions (vacuum packing or packing in a modified gas environment);
- Storage, shipment, transportation of food products.

*An example of the flowchart description is in Annex 10 to the guidelines.*
13. DEVELOPMENT AND IMPLEMENTATION OF THE HACCP SYSTEM

The HACCP system is a aggregate of the organizational structure, documents, production processes and resources necessary to implement the HASSR principles.

The HACCP system includes 7 stages:

1. Identifying hazards that will be prevented, eliminated or reduced to the acceptable risk level;
2. Identifying critical control points or CCPs at the stage where it is necessary to control a CCP to prevent, eliminate or reduce the CCP to the acceptable risk level;
3. Setting critical limits for every CCP in order to define acceptability and unacceptability criteria to prevent, eliminate or reduce the identified hazards;
4. Developing and implementing efficient CCP monitoring procedures based on planned measures or observations;
5. Specifying corrective actions to be taken if monitoring shows that there is no control in a particular CCP;
6. Developing procedures to verify the efficiency of measures specified in paragraphs 1-5;
7. Developing documentation regarding all procedures and records of implementing the HACCP-based program, which is necessary to demonstrate the efficient application of measures specified in paragraphs 1-6.

Developing and implementing of the company's HACCP-based system primarily involves forming the organizational or functional structure comprising specialists with assigned responsibilities and authority; defining the program's work principles; and cooperating with other company departments regarding food safety issues.

To develop the HACCP system, the organization will appoint a group of experts having specialized skills and experience.

The HACCP team members collectively will have sufficient skills and experience in core and related areas such as food production, food safety management, veterinary, general microbiology, general chemistry, maintenance of equipment to include monitoring and metering equipment as well as legislative and other mandatory requirements set for food products.

STB 1470-2012: “Food safety management systems. Food safety management based on hazards analysis and critical control points. General requirements.”

The organization must define the scope of activities of the HACCP system. In the application area, products or types of products, processes and production sites subject to the HACCP must be specified.
13.1. Product description

An organization developing the HACCP system will collect the information on food products to identify hazards.

The HACCP team will describe the food raw materials, products, materials that contact food products in order to identify possible hazards that may be in food raw materials or packaging materials, and record the description of the finished product.

The description of the food raw materials will include the following information:
- Biological, chemical and physical characteristics;
- Ingredients including food additives and processing aid means;
- Origin;
- Production methods;
- Packaging and shipment methods;
- Storage conditions and shelf life (expiration date);
- Preparation or processing before use or processing;
- Acceptance criteria related to food product safety or requirements of the purchased food raw materials and auxiliary materials that correspond to their purpose of use.

Finished food product description will include the following information:
- Name of the finished product and the identification that can replace it;
- Ingredients;
- Biological, chemical and physical indicators related to food safety;
- Storage conditions and estimated shelf life (expiration date);
- Packing;
- Labeling related to food safety and/or handling, cooking and/or consumption instructions;
- Means of distribution.

Food product descriptions will be maintained up to date. Whenever there is a change, the information will be updated.

13.2. Process flowchart development

Requirements for process flowcharts are described in Section 12 of the guidelines.

After the process flowchart is created, the chart will be checked at the production facility and amended if necessary.

13.3. List of hazards and control measures

The organization will create a list of all potential hazards that have a high probability to occur at every stage of the production process.
Biological hazards are pathogenic microorganisms, protozoan, and helminths in food raw materials and food products.

Chemical hazards are contaminants, traces of veterinary drugs, pesticides, disinfectants and detergents, food additives, flavorants, means of processing aids, lubricants applied in production equipment, and allergens.

Physical hazards are foreign objects of various origins (metal, wood, plastic, paint, glass, parts of process equipment).

Risks have to be analyzed in order to define the hazards to be controlled by the HACCP system. In this procedure, the risk is defined, eliminated or reduced to the acceptable level, which is essential for the production of safe food.

Consider the following during the hazard analysis:

- Probability of presence or emergence of the hazards, and severity of adverse consequences to human health;
- Qualitative and/or quantitative hazard estimates;
- Survival or reproduction of pathogenic microorganisms, inappropriate chemicals generated in semi-finished products, end products, in production lines or in the production environment;
- Accumulation or retention of toxins or other undesirable products of microbial metabolism, chemical agents, physical agents or allergens in food;
- Contamination (or secondary contamination) of the biological (microorganisms, parasites), chemical or physical origin of food raw materials, semi-finished products or end products.

13.4. Definition and description of controls applied to each type of hazard

To identify control measures, actions and activities to be taken have to be described in order to prevent hazards, eliminate and reduce their impact, or reduce them to an acceptable level.

To control a certain hazard, several control measure may be needed; one measure can control several hazards.

For example, one control measure (pasteurization or regulation of heat treatment) can sufficiently guarantee to reduce both Salmonella and Listeria.

To be efficiently implemented, these activities will be accompanied by specific written procedures and specifications.

For example, activities will include detailed cleaning schedules, precise heat treatment specifications, and minimum and maximum concentrations of preservatives according to mandatory requirements.

13.5. Finding critical control points

When finding CCPs, applying logic becomes necessary. A “decision tree” can be used for this.
When using the “decision tree,” all stages of the process presented in the flowchart will be analyzed sequentially. At every production process stage, the “decision tree” will be applied to the hazard identified having a high probability of occurring, emerging or migrating there, along with identifying the measures controlling the hazard.

Applying the “decision tree” will be flexible, taking into account the entire production process in order to prevent needless CCPs.

When finding CCPs, corresponding control measures have to be efficiently developed and implemented. In particular, if the hazard is identified at the stage in which controlling food safety is necessary, and at this point or in any other place there is no control measure, the product or process will then be modified at this stage or earlier to include the defined control measure and the establishment and implementation of the monitoring system at each critical control point.

13.6. Setting critical limits

Critical limits will be defined for every control measure related to the CCP.

Critical limits correspond to the extreme values acceptable with respect to food safety. They separate acceptability from unacceptability; they are set with observable or measurable parameters, which can demonstrate that the CCP is under control. Critical limits will be based on sound evidence that demonstrates that the selected values lead to process management.

Examples of such parameters include temperature, time, pH, moisture content, content of food additives (e.g., preservatives), salt level, and such organoleptic properties as exterior appearance and consistency. In some cases, to reduce the risk of exceeding the critical limit due to the variability of the process, some more stringent levels can be applied (i.e., target levels) to ensure that the critical limits are met.

Various sources can be used to justify critical limits. If the specified values are different from regulatory requirements or standards, or if the specified values are missing, then it is necessary to obtain proof that the application of such limits ensures control of the hazard found in the CCP.

13.7. Developing the monitoring procedures in the CCP

An integral part of the HACCP system are observations or measurements made at each CCP to ensure compliance with the specified critical limits. Observations or measurements will detect the loss of control in a CCP and provide information within the timeframe necessary to take corrective actions.

Wherever possible, ensure corresponding adjustments are made to the processes in which the monitoring results indicate a trend towards loss of control at the CCP. Adjustments will be made before critical limits are pushed at the CCP.

Data resulting from monitoring will be evaluated by the designated employee with the skills and authority to take corrective actions if there are indications to do so.
Observations or measurements are carried out continuously or periodically. When observations or measurements are not continuous, then set their frequency to ensure control reliability. The monitoring program will specify the applied methods, frequency of observations or measurements, and recording and identification procedures specifying the who, when and how monitoring and controls are accomplished.

The CCP monitoring documentation will be signed by the person responsible for the monitoring; an officer of the company or organization will sign the documents during inspections.

13.8. Development of corrective actions

Corrective actions will be planned for every CCP; these actions will be taken without delays, if during monitoring, the critical limits are found to have been exceeded.

Corrective actions will include the following:

- Proper identification of the employee responsible for implementing the corrective action;
- Description of means and actions to be taken to correct the discovered deviation;
- Actions to be taken with respect to the food products manufactured during the time when the process was out of control;
- A written report on the measures taken, specifying all necessary information (date, time, type of activity or action, who took the action, and when the next inspection is planned).

13.9. Developing the procedure to verify the efficiency of control measures

Once implemented, the HACCP system will be verified.

Verification uses methods, procedures, and inspections in addition to those used in monitoring to determine whether the HACCP system works as planned or whether there are certain problems.

Verification is conducted to find out the following:

- Whether the HACCP system complies with the developed HACCP plan;
- Whether the developed HACCP plan complies with production process and is efficient.

Verification methods include the following:

- Random sampling and sample tests;
- In-depth analysis or testing samples taken at the CCPs;
- Testing semi-finished and end products;
- Analyzing storage, transportation, marketing and standard use of the product.

The frequency of verification is sufficient to prove the efficiency of the HACCP plan and depends on the peculiarities of production (end product type and volume of production, output, number of company employees), frequency of monitoring procedures, accuracy of workers, number of deviations fixed over a certain time period and hazards related to specified deviations.
Verification procedures will include the following:

- Inspection of the plan based on the HACCP principles and reports on implementation;
- Inspection of individual operations;
- Confirmation that the CCPs are under control;
- Validation of critical limits;
- Overview of deviations and product non-conformities;
- Corrective measures taken due to non-conformities found.

Verification frequency will considerably affect the number of revalidations or product recalls in cases when deviations exceed critical limits.

Verification will be made by an employee neither involved in monitoring and corrective actions nor responsible for them.

If any verification activity cannot be organized by the company itself, then these actions will be outsourced to external experts or qualified third parties.

13.10 Development of documentation on all procedures and records

The organization will document its procedures of the HACCP system. Documentation and record keeping will be appropriate to the nature and scope of the company’s activities and sufficient to ensure that the HACCP elements have been implemented and sustained.

Documents and records will be maintained for a period of time, sufficient enough to verify that the HACCP system functions efficiently.

A simple record keeping system will be efficient and understandable to company employees.
The modern food industry depends on complex relationships between multiple companies. Successful interaction between suppliers of ingredients, packaging, packers and other participants of the supply chain is the basis for efficient food safety management.

Preventing production and procurement of contaminated or fake raw materials and auxiliary and packaging materials is much more efficient than taking measures to correct the situation after a contaminated food raw material was used to make food products.

The food manufacturers are responsible for selecting suppliers that can procure ingredients, food packaging and services consistent with the objectives of the company in the field of food safety.

Food manufacturers will identify strengths and weaknesses of the suppliers in terms of food safety.

Before purchasing food raw materials and auxiliary materials, manufacturers engaged in procurement should assess the existing food safety system of their supplier to find out whether the system is efficient and capable of guaranteeing production and further procurement of safe food raw materials and auxiliary materials.

In procurement, manufacturers may establish special requirements to the purchased products, and these requirements can be more rigid than the requirements of the TNLAs.

Manufacturers may apply various methods to organize preliminary supplier assessment. Such methods include auditing supplier’s manufacturing facilities, product testing, and evaluation and verification of the product’s specifications. Irrespective of the method, such an assessment will guarantee existence of programs that efficiently ensure safety of food raw materials and auxiliary materials.

An efficient system of control and monitoring of suppliers and implementation of the supply chain management strategy provide considerable benefits:

- Reduces food safety problems related to the purchased food raw materials/products;
- Contributes to effective management of the factors hazardous to food products;
- Stimulates shaping of strategic relationships with suppliers;
- Helps develop supplier’s skills and capacity;
- Contributes to developing a supply chain management strategy;
- Improves the supplier’s operations;
- Promotes continual improvements.

All food raw materials, materials and products supplied to the organization will comply with the set requirements of product quality and safety, these supplied items will be accompanied by the documents certifying the quality and safety of the above.

The company is advised to develop a formal procedure for selection, approval and monitoring suppliers; this procedure should be agreed upon with the person responsible for procuring food raw materials and auxiliary materials.

The supplier selection procedure will have criteria to assess the suppliers of food raw materials and auxiliary materials. The manufacturer will define such criteria independently, depending on the importance of the procured food raw materials and auxiliary materials, i.e. different criteria can be applied to different suppliers or types of raw materials.
The assessment criteria may include the following:
• Implementation of a food safety management system;
• Quality and safety of the food raw material supplied;
• Number of defective batches of the product per year;
• Availability of the set of documents verifying the quality and safety of the food raw material supplied;
• Promptness of delivery of food raw materials.

Supplier evaluation inspection may include the following elements:
• Assessment of hazards, identification of control measures, compliance with the food safety control measures;
• Production control program, including standard operating procedures for production sanitation and hygiene, cleaning schedules, pest control, verification and monitoring whether sanitary measures are taken;
• Preventing foreign objects from dropping into the products, including the use of metal detectors, nets, filters, sieves and magnets;
• Allergen management program (if available);
• A program to include the recall of a potentially hazardous product from the retail network, product analysis, and an ingredient traceability system;
• Food protection program;
• Non-conforming and recalled product rework;
• Supplier management;
• Testing of incoming food raw materials, semi-finished products and auxiliary materials;
• Studying inspection statements provided by supervisory authorities; analyzing customer claims and complaints;
• Document keeping;
• Employee training.

Based on the company’s assessment results, a list of suppliers is made; this list will be reviewed annually for reliable suppliers to be shortlisted and for unreliable suppliers regarding food raw materials, auxiliary materials, established safety requirements or in-house requirements to be excluded from the list and replaced by new suppliers.

By analyzing the collected data, suppliers could be ranked as accepted or banned.

_An example of the supplier evaluation methodology is in Annex 11 to the guidelines._
Laboratory surveys, research, tests, measurements and laboratory control will be organized by the objects of production control independently in a production lab or outsourced on a contract basis to accredited laboratories. Laboratory surveys, research, tests and laboratory control cover food raw materials, semi-finished products, end products, auxiliary materials that contact food raw materials and end products. Regarding production technologies, storage, marketing and transportation of end products, processes of sanitizing the equipment, packaging, production tools, and employee hygiene at the stages of production of food raw materials and end products, the laboratory surveys, research, tests and laboratory control are organized according to the production laboratory control scheme.

Sampling requires careful attention. The main issue in sampling is to obtain a representative sample of the product for testing. If sampling is made by the test laboratory accredited in compliance with the STB ISO/IEC 17025 requirements, record keeping of the sampling procedures will be made according to this standard. A description of the sampling procedure is also necessary for further actions taken in production laboratories, for example, when preparing a sample for analysis and testing.

The laboratory will have a document specifying the frequency of sampling food raw materials, auxiliary materials, semi-finished products, and end products for subsequent testing. This may be a schedule, plan, scheme of a production laboratory or technical-chemical control laboratory.

Specialists who do the sampling will undergo appropriate training on the sampling rules.

Sampling will be carried out according to the TLNA requirements for a particular product type.

The amount (by volume or weight) of the laboratory samples for analysis will be sufficient to fulfill the requisite analyses of this product type (set by regulatory documents on food safety or by a certain sampling statement). The exact mass of the test portion needed for every type of research will be established according to applicable regulatory documents on research methods (STB, GOST, MU, etc.).

Sample storage conditions will guarantee the preservation of samples and the stability of their properties. Samples will be stored in clean inert containers. If microbial contamination is analyzed, these samples will be maintained in sterile packaging or containers enabling sufficient protection from external contamination and damage in transportation and storage.

Packing materials contacting product samples will be waterproof, grease proof, insoluble, nonabsorbent, without changing the chemical composition of the product sample and without permeating the product sample with any taste or smell.

Samples will be clearly identified. Therefore, each sample will be packed and labeled (a tag will be attached) or an identification code will be put on the sample right after sample acquisition. When labeling, the code of the sample will be included as well as the product name, sampling date, and the number and date of the sampling statement.

Samples will be tested in a laboratory as quickly as possible in compliance with measures preventing leakage, drying and damage of the samples.

Product sampling will be accompanied by issuing the product sampling statement.
16. PRODUCTION WASTE MANAGEMENT

Production of safe food seriously depends on waste management, because waste presents a high contamination risk for ready-to-eat food and the environment.

To reduce this risk to an acceptable level, waste identification, collection, disposal procedures must be established to prevent contamination of products, production sites and the environment.

Production waste management procedures are an integral part of the production control program.

The company will appoint officials responsible for production waste management according to established procedures.

Waste will be categorized according to the regulatory requirements of Belarus, and depending on the intended disposal method, the waste will be isolated and collected in special containers.

The company will have enough containers to collect waste, inedible or hazardous substances. These containers will be clearly labeled to indicate their use; the containers will be placed in certain designated areas; the containers will be made of resistant material that can be cleaned and sanitized; the containers will be closed when not in use or locked in cases when waste can pose product contamination risks.

Accumulating waste at loading and unloading sites or at food storage areas is prohibited. The frequency of waste removal will be controlled to prevent waste accumulation.

Waste management of production waste that is not a source of microbiological hazards (paper, glass, plastic, etc.) will be organized according to Law of the Republic of Belarus “On Waste Management” (No. 271-3 dated July 20, 2007; latest version dated December 28, 2009).

If relevant, production waste is stored in closed containers impervious to pests.

If considered as waste, labeled materials, products or packaging will be processed in such a way that trademarks cannot be reused.

Household garbage and industrial waste that cannot be recycled for nutritional purposes (irretrievable waste) will be collected in vessels with polymeric bag-liners.

Irretrievable food production waste that can spoil will be stored in refrigerators (minus 10 °C or below) until the waste is disposed.

Voluminous waste exposed to spoilage and unable to be maintained in refrigerators will be moved away from the company area within 12 hours of the waste generation.

Waste removal and disposal will be carried out only by approved (certified) specialized organizations.

Producers and specialized organizations will keep waste disposal documentation.

Main documents regulating waste management activities in Belarus are as follows:

- Law of the Republic of Belarus “On Environmental Protection” (No. 1982-XII dated November 26, 1992; latest version dated December 31, 2009);
- Law of the Republic of Belarus “On Waste Management” (No. 271-3 dated July 20, 2007; latest version dated December 28, 2009);
(No. 340-3 dated January 07, 2012);
• Decree of the President of the Republic of Belarus “On Some Measures to Improve Organization of Waste Storage and Use as Secondary Raw Materials” (No. 437 dated July 10, 2006; latest version dated May 12, 2009);
• Decision of the Council of Ministers of the Republic of Belarus “On Approval of the Regulation on Coordination of the Economically Feasible Use of Industrial and Consumer Waste” (No. 404 dated March 13, 1998; latest version March 15, 2007);
• SanPiN “Hygienic Requirements for Collection, Storage, Transportation and Primary Processing of Secondary Raw Materials” (No. 2.1.12-61-2005 dated December 30, 2005);
• Veterinary-sanitary rules of burial and disposal of dead animals, products of animal origin that do not meet the requirements of the veterinary-sanitary rules dated September 24, 2012.

The company will develop a master plan of the area and production facility plans showing waste collection areas, waste transportation routes, and areas where the company disposes of waste. Traffic routes of raw materials, end products, clean and dirty tare, personnel, packaging materials, and waste will not intersect.

This is why minimizing cross-contamination of food is necessary.

The company will develop an industrial waste registration system (waste traceability). Checking the waste balance systematically is necessary: the amount of the collected industrial waste will correspond to the amount of the waste, which has been documented and removed to the industrial waste landfill according to the waybill(s).

Waste management procedures have to be developed, containing a list of generated waste, frequency of waste removal from production premises, and the procedure specifying record keeping and further actions related to waste and byproducts and rejected products (place, terms and storage conditions, mode and method of disposal).

Waste generated during laboratory tests may not be reprocessed for nutritional purposes. Removed waste will be accompanied by the necessary documents (passports). The waste temperature in transit will ensure waste safety to human health and the environment.

According to Belarusian law, waste management records must be maintained.
17. IMPLEMENTING THE TRACEABILITY PROCEDURE

Food safety has recently been of growing importance both for consumers and food producers. This is because the market frequently receives food products that are not safe for consumer health (e.g., beef infected with prions, dioxin in chicken feed, salmonella in poultry and other meats, bird flu incidents). For example, food safety is almost constantly in the spotlight in European Union countries: at least one food hazard case is registered daily and about 200 food products, hazardous in one way or the other, are removed from the market annually.

In the food industry, the traceability system is one possible way to trace the entire product life cycle from beginning to end of the processing chain to clearly identify a piece or installment of the product at all stages of production, processing and transportation from the producer to the consumer.

In general, the traceability system enables tracing the entire future route of the product in order to recall it in case of an incident; to have complete documentation on the product’s production and production process parameters; and to jump back on the production chain and identify the raw materials used when the food raw materials were found to have caused the adverse event. As such, the traceability system is not a prerogative of food companies. A traceability system is also a must (when introduced) for suppliers of raw materials, animal feed, various ingredients, packaging, detergents and disinfectants, freight forwarders, wholesalers and retailers.

However, there is no universal traceability system. Every production has its own peculiarities and procedures, but the necessary information is maintained to trace the route of the product; this information is sufficient and meets regulatory norms and requirements.

For this purpose, a company will define the unit of traceability.

The traceability unit can be both a piece and a weekly volume of production. Currently for the majority of manufacturers, a traceability unit is the volume of produce manufactured per shift or per day. Remember that when a big consignment is chosen as a traceability unit, the cost is low, but economic loss is high in case of consignment recall. The available information may turn out to be worthless. Conversely, if a small consignment is chosen as a traceability unit, the cost is high, but the economic loss is low in case of recall. The available information is useful to control the entire chain.

If the size of the traceability unit is chosen incorrectly, the system may turn out to be ineffective and useless. The traceability system can be based on both paper documentation and information technologies.

If properly implemented in case of food safety problems for the consumer, the traceability system enables the following:

- Reduces hazards when producing food and ensures quick response in extraordinary situations;
- Identifies all potentially hazardous food products, simplifies food recall and withdrawal at any stage of the product life cycle;
- Traces food production stages of food raw materials used in production for consumers;
- Minimizes financial losses when recalling the products because of the possibility of recalling only certain consignments of the end product;
• Reduces negative reactions of consumers toward the incident due to approved limitations on
the volume of the recalled food.

The company will define its place in the production chain of animal feed and food products
by at least indicating suppliers and consumers. The information necessary for the traceability sys-
tem depends on the company’s goals and position in the production chain of animal feed and
food products.

To meet the objectives of the traceability system, the company will decide what information
needs tracing:
• Received from suppliers;
• Collected on the food and production process;
• Provided to consumers and/or suppliers.

A staff training plan has to be developed and implemented. After the corresponding training,
employees will be informed of the necessity to follow the traceability system requirements.

Employees will demonstrate their competencies in properly implementing the traceability
system.

Please find more detailed information on the traceability system in “The Guidelines to food
traceability based on the meat products example” developed by the Belarusian State Insti-
tute of Metrology or BelGIM.
If the company or organization involved in the food chain believes or has reason to believe that food the company brought, produced, processed, manufactured or distributed is potentially hazardous, the company will immediately start recalling the product from the market according to product recall procedures and inform competent authorities about this fact. If the product has already reached consumers, the company involved in the food chain will efficiently and clearly inform consumers of the reasons for the product recall and then recall the already delivered product, if necessary.

The company must manage potentially dangerous food and take actions to prevent the flow of such food into the food chain.

For this purpose, the company will develop and implement a system to identify, find and remove from all relevant supply chain links any food products that do not meet food safety requirements.

The company will develop and maintain a documented recall procedure; this procedure will define how the interested parties will be informed (e.g., supervisory and regulatory bodies, customers and their consumers) if potentially hazardous food has been marketed, and further actions related to product recall (disposal, rework of the recalled food and installments of the non-conforming products stored at the warehouse).

The company will determine and regularly review the list of addresses of individuals or organizations to be contacted in case of a food product recall. This list will include competent authorities (the law requires that government authorities must be informed of any incident related to food recalls); customers (to trace the food product along the entire marketing chain, the next link in the chain has to be informed); suppliers (they will be informed of any food product, if found that the product does not meet the technical requirements, so that the suppliers can take relevant measures); and the mass media (if the food product has already been sold, consumers must be informed of the food product and potential hazards).

To ensure a full and timely recall of the installments of potentially hazardous food products, the company will appoint authorized staff to initiate a recall and the staff responsible for carrying out the recall. To do this, the company will make a list of key contact persons in case of a food product recall.

Recalled food will be controlled until destroyed or used for purposes other than consumption by humans or considered unsafe for consumption or recycled in a manner that ensures food safety.

The company or organization will develop a written instruction on recall procedures that specify the following:

- Company employee responsible for deciding what installments of the food product will be recalled;
- Company employee responsible for forwarding corresponding notifications to stakeholders and informing consumers of the safety of the recalled product if necessary.

Recalled food products will be maintained at designated storage locations. Corresponding labeling will be maintained on the food product until the disposition of the food product is decided (rework, disposal as waste, incineration, etc.).

Information about what has been accomplished with the recalled food product will be recorded in relevant documentation.
The company or organization will guarantee that if a certain amount of the food product has been found unsafe, the entire consignment of the food product to include this amount will be recalled. In addition, the food products manufactured from the same batch of food raw materials or on the same day may also be subject to recall.

The company will inspect and register the efficiency of the recall procedures through appropriate training or practical recall procedures.

The company will maintain documentation on all recalled products.
19. PRODUCT LABELING REQUIREMENTS

When developing the production control program, setting requirements for labeling and packaging of the food products is necessary because the materials and packaging may be potential contamination sources.

Each unit of packaging with food products will have permanent labeling indicating the manufacturer and the batch number. All food products will be accompanied by sufficient information or the information will be presented on the food products in such a way that the buyer or seller could safely and properly handle the food product, put it on display, in a store, and consume it.

The company will develop and implement procedures that ensure correct product labeling.

The information on the food product labeling will be presented to the consumer in such a way that the consumer could understand its importance and make an informed choice.

The packing will carry all warning signs and labels.

For example, “contains phenylalanine,” “contains residual quantity of nuts,” “contains a dye that can have a negative impact on activity and attention in children,” etc.

The company will develop a procedure for designing and approving label templates and assign employees responsible for coordination, approval, storage and removal of obsolete label templates (reference samples).

Labeling of food products will be periodically reviewed in order to specify accurate information about the ingredients and properties of the food product and other information that may be needed for the consumer or retailer.
20. PRODUCT WAREHOUSING AND STORAGE PROCEDURE

The company or organization will designate places for storage of food raw materials, auxiliary materials and end products; the company will also specify storage conditions for food raw materials, auxiliary materials and end products.

Food raw materials, auxiliary materials and end products will be stored in clean, dry and well-ventilated premises protected from dust, condensation, smoke, odors and other contamination sources.

Food neighborhood rules and storage regulations will be strictly adhered to for storing food raw materials and end products. Food with specific smells will be maintained separately from food products that can absorb odors (butter, milk, pasta, etc.).

The company will set and monitor the storage temperature, humidity and other ambient parameters to be followed when storing food raw materials and end products. Storage sites will have product specifications or specifications on the food storage conditions.

The sites storing food products in stacks are recommended to foresee measures to protect bottom layers of food raw materials and end products.

There will be separate areas for storing waste and chemicals (detergents, lubricants and pesticides). To store food raw materials, auxiliary materials and end products that do not meet the TNLA requirements, separate areas have to be designated or non-conforming products have to isolated in some other way.

The company will develop and observe procedures to apply the inventory renewal system (FIFO, FEFO) to avoid food spoilage when storing the products.

**First In, First Out (FIFO):** food raw materials that arrive at the warehouse first will be the first to leave for production.

**First Expire, First Out (FEFO):** food raw materials whose shelf life expires first will be the first to leave for production.

Storage of food raw materials, auxiliary materials and end products can be divided into three stages:

- Storage of food raw materials, auxiliary materials and packaging during warehousing;
- Storage of food raw materials, semi-finished products during the food production process;
- Storage of end products in stock.

Storage of food raw materials, auxiliary materials and packaging in stock as well as during the production process will be carried out in compliance with corresponding storage conditions for food raw materials, ingredients and packaging (temperature, relative humidity, illumination and ventilation if they affect quality and safety of the manufactured food products);

Rotating inventory is necessary to avoid spoilage of food raw materials and ingredients.

Storage will be organized in such a way that food raw materials, auxiliary materials and semi-fabricated products will not be damaged, spoiled or contaminated.
Storage will be organized according to the requirements of food product type. For each type of food raw materials and auxiliary materials there will be documentation available on their storage conditions.

Food products damaged or suspicious regarding safety will be stored in a separate section of the warehouse or manufacturing facilities and labeled accordingly.

The storage of end products will be organized in such a way that the product will not be damaged, spoiled or contaminated.

Storage of end products will be organized according to the requirements of the food product type. The warehouse will have documentation on monitoring storage conditions of end products, and relevant records will be maintained to show that storage conditions have been monitored.

Food products requiring laboratory tests will also be stored in separate sections of the warehouse (or on special shelves), and marked accordingly.

Food products recalled from the market will be stored in a separate section of the warehouse (or on special shelves) and marked accordingly.

The company will implement procedures for applying special labels to indicate that a product belongs to a particular batch.

Labeling removed from the industrial packing of the product at stock or in a production room will be maintained in the archive (or a copy of the label will be archived), and the product itself will have a temporary label carrying all necessary information. The company will control whether the labeling of such products is correct.

20.1. Storage of chemicals used at food companies (chemicals used in production processes but not becoming a part of the product, e.g., detergents, disinfectants, pest control agents)

Storage of chemicals will be organized in such a way not to pose safety hazards for food raw materials, ingredients, packaging, semi-finished products and end products.

Only chemicals intended for use in the food industry can be stored. Every batch of chemicals will be accompanied by a certificate of origin. Chemicals will be stored according to their prescribed storage conditions in specially designated rooms (parts of rooms, containers) with corresponding visible identification. The premises will be efficiently ventilated. A good practice is for the amount of chemicals in the production area not to exceed the volume of their daily consumption. Precautions will be taken to prevent contamination of food products and working surfaces with these chemicals (they will be properly labeled and stored in closed containers and not positioned close to food).

All warehouses will be cleaned daily: remove garbage, waste, tare, sweep walls and ceilings regularly. Before cleaning, the products will be closed to avoid contamination of food raw materials, auxiliary materials and end products.

Refrigerating chambers storing food raw materials and end products will also be in proper condition. Refrigerating chambers will be systematically cleaned, defrosted, and sanitized.

Petrol or diesel autoloaders will not be used in the storage areas for food raw materials, auxiliary materials or end products; loaders with rubber tires generating rubber dust due to tire wearing will not be used in the area either.
Annex 1

EXAMPLE OF ALLOCATION OF THE OFFICERS’ DUTIES

**Director of the company** will:
- Allocate financial, timing, production, and human resources to keep the production control program or PCP operating and to timely fulfill mandatory PCP requirements.

**Chief Engineer** will:
- Timely develop a list of possible emergency situations related to suspension of production and abuse of technological processes;
- Promptly investigate accidents and develop measures to prevent such accidents in future;
- Timely develop and update the layouts of industrial, auxiliary and utility rooms, buildings, and constructions;
- Timely develop and update the technological equipment installation diagrams;
- Timely develop and update plans for external and internal networks of hot and cold utility and drinking water supply, technical water supply, heating, ventilation, and sewage (as-built drawings);
- Timely organize production waste management;
- Promptly exchange information within the framework of his or her competence.

**Production Manager** will:
- Timely develop descriptions and requirements for production processes;
- Timely develop and update technological instructions for manufacturing food products;
- Promptly exchange information within the framework of his or her competence;
- Organize food production according to the production capacity of the existing production equipment and determine the range of food products to be produced.

**Head of Production Laboratory** will:
- Organize laboratory control of food raw materials, auxiliary materials, end products;
- Organize full-scope tests according to the production control schemes at all stages of the production processes;
- Organize quality control of incoming raw materials, auxiliary and packaging materials, and packaging;
- Control quality and safety of the end products manufactured and distributed by the company;
- Promptly exchange information within the framework of his or her competence;
- Analyze and assess food safety hazards.
**Head of Procurement Department** will:
- Evaluate suppliers of food raw materials, packaging and auxiliary materials that contact food products;
- Maintain a registry of accepted and banned suppliers;
- Promptly exchange information within the framework of his or her competence.

**Standardization Engineer** will:
- Acquire and timely update the set of documents necessary to implement the PCP;
- Complete the set of TNLAs;
- Timely provide necessary TNLAs, normative legal acts or NLAs, sanitary normative regulations and hygienic norms or SNRAHNs to structural units of the company;
- Promptly remove the documents no longer valid;
- Promptly exchange information within the framework of his or her competence.

**Warehouse Manager** will:
- Organize storage of raw materials and end products;
- Establish appropriate conditions for storing food raw materials, auxiliary materials and end products;
- Follow the principle of rotating raw materials and end products (inventory update systems).

Other organization employees will comply with food safety requirements established in documents regulating their activities (work instructions, operating instructions, etc.).
## Annex 2

### EXAMPLE OF THE LIST OF DOCUMENTS REQUIRED TO IMPLEMENT THE PRODUCTION CONTROL PROGRAM

<table>
<thead>
<tr>
<th>№</th>
<th>Document name and identification (name, number)</th>
<th>Status</th>
<th>Document Developer</th>
<th>Controlled Copy Holder</th>
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<td>2</td>
<td><strong>Technical Codes of Good Practice</strong>&lt;br&gt;Technical Code of Settled Practice (TCSP) No. 5.1.03-2012 &quot;The national conformity assessment system of the Republic of Belarus. Product conformity declaration. General provisions.&quot;</td>
<td>Valid as of 01.06.2012</td>
<td>GOSSTANDART</td>
<td>Standards engineer</td>
</tr>
<tr>
<td>4</td>
<td><strong>Company Standards</strong>&lt;br&gt;STP ISM 008 “Procurement of food raw materials and auxiliary materials”</td>
<td>Valid as of 1/1/2011, Revision 1</td>
<td>Head of Procurement Department</td>
<td>Standards engineer</td>
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<td>5</td>
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Annex 3

Layout 1. General area layout of Lodis ZAO

(production of meat semi-finished products; indication of the flows of raw materials, auxiliary materials, finished food products, production waste)
Annex 3

Layout 2. General area layout of Lodis ZAO

(indication of pest control spots)
Annex 3

Layout 3. General area layout of Tarprom OAO

[drinking water production] (indication of water supply, sewage and steam pipelines)
Annex 3

Layout 4. Personnel traffic plan, 2nd floor, Morinierproduct Joint Venture

(fish rolls section)
Annex 3

Layout 5. Traffic plan of raw materials, auxiliary materials, end products and waste at Alvi Limited Liability Company (caramel pastry shop)
Annex 4

EXAMPLE OF EMERGENCY MANAGEMENT

1. In case of a power outage, the electrician on duty will inform the chief power engineer (office phone: (016) 213-57-12); define the breakdown at the transformer substation; restore it from failure; and document the corresponding record in the daily operating personnel log (electricians). If the emergency cannot be resolved within 3 hours, semi-finished products and products in the production line will be utilized according to STP 124.14 “Production Waste Management.”

2. In case of a steam outage, the internal plumber on duty will inform the chief power engineer and the head of the MPC work area; call the boiler attendant (Tel Ext. 21 05) to stop supplying steam to the steam pipeline; drain the steam supply system supply and troubleshoot the breakdown; document the accident in the daily operating personnel log (internal plumbers). Since steam is not applied in production processes, there are no actions to be taken for food products and semi-finished products.

3. In case of a water outage the internal plumber on duty will inform the chief power engineer and the head of the work area by intercom (121); cut off the water supply at the heating system manifold; repair the failure; document the accident in the log of water supply and sewage accidents and repairs. Since this emergency does not affect safety of the manufactured products (due to peculiarities of production), there are no actions to be taken for food products and semi-finished products.

4. In case of an emergency in the refrigerating unit system, the compressor units duty shift service will notify the chief mechanic by phone (office phone (072) 214-32-11); limit heat uptakes in the refrigerated room (avoid opening the heat-insulating doors); and take all measures to remove the causes of the accident. If there are reasons to think that the product is unsafe, the commission will decide whether an additional product control needs to be organized to check safety indicators; after that, the product is managed according to STP 012 “Management of Non-conforming Products.”

5. If there is an accident during product transportation, the forwarding driver will contact the commercial deputy director (office phone: (017) 212-34-56, mobile phone: (044) 601-23-45); based on the order of the latter the driver will decide further actions to be applied to the transported products. The vehicle driver will take necessary actions to ensure security of the products as well as actions ensuring stability of quality and safety of the raw materials (wetting, contamination with the outside objects, etc.). If the vehicle is broken, unloading the products from the vehicle is prohibited. The products can only be reloaded into a second vehicle. Offloading the products to the ground is prohibited. The products will be put on pallets.
Example of emergency management during the production process of manufacturing sausages and meat products:

*In case of power or water outages at the forcemeat manufacturing stage:*

- Forcemeat will be unloaded from the cutter into carts and sent for storage to the salting chamber (temperature: 0 to minus 4 °C);
- Once the accident is fixed within 3 hours, the forcemeat can be added to cooked sausages, frankfurters and wieners in the amount of 3 percent as a processing deficiency after relevant documents are formalized according to technological instructions;
- Once the accident is fixed in 3 hours after it happened, a commission will produce a statement for the non-conforming amount of forcemeat; this statement will specify the decision of the commission to forward this processing deficiency either for industrial rework or for recycle.
EXAMPLE OF APPLIED DISINFECTION METHODS AND CLEANING PROCEDURES

A standard cleaning procedure usually includes mechanical cleaning, washing and disinfection.

**Mechanical cleaning** means removal of visible waste and dirt by manual waste collection or with the help of scrapers and wipes. The end result is controlled visually.

**Washing** is a complex process of removing impurities, the success of which extremely depends on constant and variable factors.

The usual constant factors are hygienic design, materials, water quality, and impurities.

*Hygienic design* of the room means surfaces as smooth as possible (walls, ceilings, floors); the equipment will have vertical, angled or inclined surfaces, which are easier to wash than equipment with multiple edges, corners, hollows and rough surfaces.

*Materials* from which all surfaces and equipment are produced will be solid and unbreakable and resistant to detergents and disinfectants.

*Water quality* is important both to predict washing results and to prevent corrosion of the materials contacting water. High water hardness (i.e., high content of potassium and magnesium salts) reduces washing process efficiency. This is because alkali wash forms an inorganic residuum in which microorganisms actively grow and form biofilms. To avoid this effect, apply only alkaline detergents enriched with special complex compounds that hold inorganic salts in the solution or dispersion. Soft water also has disadvantages because it is corrosive. In this case, add some detergents as inhibitors. Water rich in chlorides increases the risk of corrosion, especially in combination with acidic media, making it possible to see the effects of pointed corrosion, especially on stainless steel.

*Type, degree and pollution status* are dominant factors when choosing a detergent. There can be different types of pollutions that, due to their physical and chemical characteristics, respond differently to the same components of detergents.

*Variables* chosen according to specific tasks are mechanical force, exposure time, temperature, solution concentration.

*Mechanical force.* This helps eliminate some pollution types.

*Exposure time.* If the exposure time of the detergent is short, the washing effect will be bad; however, prolonged exposure of detergents on equipment surfaces increases the risk of corrosion. Temperature will be higher than the fat melting temperature and lower than the protein coagulation temperature, i.e. at least 55 °C.
Concentration. Low concentration of detergent is not sufficient for good cleaning, but unreasonably high concentration leads to extremely high production costs and increases the risk of corrosion and environment pollution.

Washing removes dirt and some existing microorganisms. The disinfection process will exterminate all allegedly present pathogens, and the number of other microorganisms will decrease so much that they not affect food safety.

Disinfection quality depends on the following:
- Quality of preceding cleaning;
- Disinfectant concentration;
- Type and concentration of microbial contamination;
- Time of contact between the disinfected surface and the disinfectant agent;
- Physical and chemical environmental factors (presence of soluble calcium or magnesium in water increases its hardness and neutralizes disinfectants; temperature increase accelerates disinfectant action);
- Existence of biofilms at the processed site.

Disinfection methods

There are four disinfection methods: physical, chemical, biological, combined.

**PHYSICAL** disinfection is decontamination by the effects of several physical factors: mechanical, thermal, radiant, and radioactive techniques.

**MECHANICAL** disinfection is removing microorganisms from objects or their removal by shaking, rubbing, aeration, filtration, ventilation, laundry, cleaning, and washing with the use of soap and synthetic detergents. These techniques mostly ensure removal, but not extermination of microorganisms. When airing the rooms for 15 to 30 minutes through air vents, vent lights and windows, the number of pathogenic microorganisms in the air dramatically decreases because the air of the room is almost completely replaced by the outer air. However, ventilation is not always a reliable disinfecting activity and is considered an auxiliary measure, provided that its duration is at least 30 to 60 minutes.

**THERMAL** (high temperature) disinfection is roasting, annealing, boiling, pasteurization, steaming, hot airing, drying, which exterminate microorganisms by protein coagulation.

**Roasting and annealing** are used in certain cases at food companies for processing metal objects.

Boiling water (100 °C) and steam are one of the simplest and most efficient means of disinfection. Most vegetative forms of microorganisms expire in this environment within 1 to 2 minutes. This method is widely used for disinfecting utensils, tools, and equipment. However, if other disinfection methods are applied after boiling, even better results can be achieved.
Boiling is not sterilizing!

**Hot water (60 °C to 100 °C)** is often used together with dissolved detergents for washing and cleaning. Many vegetative forms of pathogenic microorganisms withstand heat up to 80 °C but only for 2.5 minutes; most of them expire at temperatures of 60-70 °C within 30 minutes.

**Water steam**, transforming in water, gives off high evaporation heat and has a great penetrating power and bactericidal effect. Water steam is used for processing jars, cisterns, tanks, etc.

**Hot air** is applied in air sterilizers to disinfect tableware, cutlery, confectionery equipment, tools. Hot air is less efficient than steam as it mainly affects surfaces.

**Ironing** of sanitary clothes, tablecloths, napkins and other linen by a hot iron at temperatures of 200-250 °C leads to exterminating vegetative forms of bacteria and to disinfecting fabrics.

**Incineration** is disinfection of solid waste, hazardous food, dead animals infected with anthrax, etc.

**Beam radiation disinfection techniques**

**Radiant** disinfection includes irradiation with various bactericidal rays (UV rays), ultrasound, ultrahigh frequency currents (UHF), ultrahigh-frequency radiation (microwave flooding), nuclear radiation as well as drying etc., having a bactericidal effect within certain parameters.

**Sunlight** disinfection uses UV rays to reduce bacterial dissemination of air and various surfaces. Due to their low penetrating power, UV rays are used for processing de-dusted surfaces and dust-free air; hard rays are limited by safety requirements. UV rays are generated by special bactericidal lamps. The industry produces wall-mounted, ceiling-mounted, fixed, mobile and combined ultraviolet radiation units of different radiation power, applied by food companies.

**Drying.** Prolonged drying kills many pathogens. The pathogen die-off rate depends on the pathogen type.

**CHEMICAL** disinfection is extermination of microorganisms by applying chemicals to surfaces, the inside of objects, air, and to a variety of substrates. Chemical disinfection methods involve the use of chemical disinfectants.

Chemical disinfection efficiency is affected by several factors:

- Quality of preceding cleaning;
- Disinfectant concentration;
- Type and concentration of microbial contamination;
- Time of contact between the disinfected surface and the disinfectant agent;
- Physical and chemical environmental factors (presence of soluble calcium or magnesium in water increases its hardness and neutralizes disinfectants; temperature increase accelerates disinfectant action);
- Existence of biofilms at the processed site.

None of the disinfectants can exterminate all microorganisms; the adequate ratio is 99 percent annihilation.
Chemical compounds included as disinfectant ingredients are divided into main (active substance) and auxiliary. The purpose of the main or active compounds is to ensure a microbicidal effect, i.e. to exterminate as many bacteria, spore forms, fungi and viruses as possible.

Auxiliary compounds reduce the negative impact of the main compounds:
- Anti-corrosion additives that protect processed items and surfaces;
- Buffer systems (acids and alkalines) that regulate pH; stabilizers, etc.;
- Bring commercial quality to the substance: dyes bring colors, and aroma compounds bring odors;
- Bring washing properties to the agent;
- Perform protective functions: protect skin from drying, maintain an optimum pH level of skin, and nourish skin.

Specifications of active substances are provided in the table.

<table>
<thead>
<tr>
<th>Active Substances Group</th>
<th>Activity</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Halogens (chlorine, iodine)</strong></td>
<td>Against bacteria (including mycobacteria), fungi, viruses</td>
<td>Low cost, high activity, fast action</td>
<td>They cause corrosion of metals and discoloration of tissues; they have low storage stability; they are inactivated by organic substances and have no washing properties.</td>
</tr>
<tr>
<td><strong>Alcohols</strong></td>
<td>Against bacteria (including mycobacteria), fungi, viruses</td>
<td>Liquids that can mix with water. They are well efficient when fighting bacteria, viruses, fungi. Fast action</td>
<td>No sporicidal action. Different quaternary ammonium compounds (QAC) have various antituberculous activity.</td>
</tr>
<tr>
<td><strong>Quaternary ammonium compounds (QAC)</strong></td>
<td>Against vegetative forms of bacteria (including mycobacteria), fungi, viruses</td>
<td>Detergent activity; do not harm processed surfaces; low toxic</td>
<td>No sporicidal action</td>
</tr>
<tr>
<td><strong>Guanidines</strong></td>
<td>Against vegetative forms of bacteria (including mycobacteria), fungi</td>
<td>Low-toxic substances with a prolonged action. Antimicrobial activity does not decrease in case of an organic load.</td>
<td>High cost. No sporicidal action</td>
</tr>
<tr>
<td><strong>Amines</strong></td>
<td>Against vegetative forms of bacteria (including mycobacteria), fungi</td>
<td>Low-toxic substances, good washing properties</td>
<td>No sporicidal action</td>
</tr>
<tr>
<td><strong>Aldehydes</strong></td>
<td>A wide range of activity against microorganisms including spores</td>
<td>High speed of extermination of the infectious agents. Antimicrobial activity does not decrease in case of an organic load. They do not cause corrosion of tool materials, do not damage tissues and surfaces, and are stable</td>
<td>Acrid smell, irritant action</td>
</tr>
<tr>
<td><strong>Phenols</strong></td>
<td>Against vegetative forms of bacteria (including mycobacteria), fungi</td>
<td>They create a residual film on sanitized surfaces</td>
<td>There is no sporicidal action, unpleasant pungent smell, irritant and sensibilizing action. They are inactivated by organic compounds; they can corrode rubber and some plastics</td>
</tr>
<tr>
<td><strong>Oxygen-containing (hydrogen peroxide and peroxyacetic acid)</strong></td>
<td>A wide range of activity against microorganisms including spores</td>
<td>They can dissolve blood and many other biological substances; rapid degradation into non-toxic products when in an open air. Fast action</td>
<td>They are incompatible with such metals as brass, zinc, copper, nickel</td>
</tr>
</tbody>
</table>
Depending on their impact on the microbial cell, active substances are divided as follows:

- Membrane-attacking active substances, which are cationic surface-active materials (very active substances, guanidines, amines);
- Oxidation-reduction active substances, which are halogens, oxygen-based substances, aldehydes;
- Destructive active substances, which are alcohols (dehydration), hydroxy acids (hydrolysis).

For complete realization of all mechanisms affecting microbial cells and in order to prevent developing resistant microorganisms, a modern disinfectant will be a composition based on a balanced formula including several active substances in ratios enabling the achievement of the maximum effect as the most resistant microorganisms are concerned.

Disinfectants can have the following application modes:

- **Bactericidal**, destruction of vegetative forms of bacteria, except tuberculosis agent;
- **Virucidal**, virus extermination;
- **Fungicidal**, fungi extermination;
- **Tuberculocidal**, tuberculosis extermination;
- **Sporicidal**, extermination of vegetative and spore forms of bacteria, viruses, fungi.

Disinfectants will be applied by food companies according to the purpose of the agents and modes specified in the manufacturer’s instructions approved by the Belarus Ministry of Healthcare.

**BIOLOGICAL disinfection technique**

This is based on an antagonistic action between different microorganisms, which is the principle of competitive exclusion. Probiotic bacteria used in cleaning agents belong to the 4th class of biological safety, and they are the members of the Bacillus genus.

**COMBINED disinfection technique**

This is based on a combination of several of the above-mentioned methods, for example, wet cleaning followed by ultraviolet irradiation.
Annex 6

Approved
Director
Alvi Joint Stock Company _____________ Name _____________, 201____

OPERATING WASHING AND DISINFECTION PROGRAM

Application area: (This is a series of measures to clean up grime and reduce the number of microorganisms at processing sites.)

Responsibility: (position)

Responsible officers:

<table>
<thead>
<tr>
<th>Site (production room, process)</th>
<th>Executive Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work area No. 1</td>
<td>Work area manager</td>
</tr>
<tr>
<td>Work area No. 2</td>
<td>Work area manager</td>
</tr>
<tr>
<td>Finished products warehouse</td>
<td>Finished products warehouse manager</td>
</tr>
<tr>
<td>Raw material warehouse</td>
<td>Raw materials warehouse supervisor</td>
</tr>
</tbody>
</table>

Procedures:

Mechanical cleaning is a cleaning of surfaces of visible contaminations.

Washing is the removing of contaminants by water containing detergents.

Disinfection is treatment with a disinfecting agent.

Routine disinfection is daily at the end of the workday and during the day, if necessary.

Preventive disinfection is monthly.

Scheduled-preventive disinfection is annual (it can coincide with routine or capital repairs).

Equipment: Clean-in-Place (CIP) is a unit for cleaning the production equipment (Instruction No. ____); CIP cleaning of the production equipment (Instruction No. ____).
The list of operating and sanitary instructions:
1. Preparation of the cleaning solutions (No. ___)
2. Cleaning of the process equipment (No. ___)
3. CIP-washing of the production equipment (No. ___)
4. Instruction No. ___ for washing and aseptic hand treatment
5. Instruction No. ___ for washing and cleaning various surfaces
6. Instruction No. ___
7. Instruction No. ___ for sanitizing and disinfecting production equipment
8. Instruction No. ___ for washing and disinfecting sanitary equipment
9. Instruction No. ___ for preparing working solutions for cleaning production equipment
10. ……………………….

List of contracts for delivering services by third parties:
1. Contract for mechanical cleaning services
2. Agreement on organizing collection, disposal and use of waste from products and packaging
3. Contract for disinsection and deratization
4. Contract for delivering burial services
5. Agreement on processing secondary raw materials
6. Contract for solid waste removal
7. …………………………..

Table 1. Means for Washing and Disinfecting

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Name</th>
<th>Application</th>
<th>Purpose/Action Description</th>
<th>Reserve (minimum)</th>
<th>Operating Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Antibacterial liquid soap</td>
<td>liquid soap</td>
<td>Washing and disinfecting hands</td>
<td>15-25 kg</td>
<td>Instruction No. ___ for washing and aseptic hands treatment</td>
</tr>
<tr>
<td>2</td>
<td>…</td>
<td>…</td>
<td>…</td>
<td>…</td>
<td>…</td>
</tr>
</tbody>
</table>
### Table 2. Waste container sanitizing plan

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Processed Object</th>
<th>Types of sanitizing and multiplicity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Current</td>
</tr>
<tr>
<td>1</td>
<td>Waste container</td>
<td>Wash with hot water and detergent, sanitize, rinse with water once a week (after waste removal)</td>
</tr>
<tr>
<td>2</td>
<td>Site</td>
<td>Clean up the site. Wash with detergent and disinfectant</td>
</tr>
</tbody>
</table>

**Note:**
1. All janitorial supplies will be rinsed with water and detergents, disinfected and dried after final cleaning at the end of the shift; after that these items will be kept clean at the stands in the production facility.

### Table 3. Working plan of sanitizing auxiliary and utility rooms

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Processed Object</th>
<th>Types of Sanitizing and Multiplicity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Current</td>
</tr>
<tr>
<td>1</td>
<td>Door(s) of production rooms</td>
<td>Wash with hot water and detergent if necessary, but at least once a week</td>
</tr>
<tr>
<td>2</td>
<td>.................</td>
<td>.................</td>
</tr>
</tbody>
</table>

**Note:**
1. Special accessories (buckets, scoops, rags, brushes) of distinctive color and labels are allocated for cleaning and disinfection of toilets; these accessories will be maintained separately from the accessories used for cleaning other premises. It is prohibited to use such tools for cleaning other premises.
2. All janitorial supplies will be rinsed with water and detergents, disinfected and dried after final cleaning at the end of the shift; after that these items will be kept clean at the stands in the production facility.

Developed by

Position  
(signature) (name)
This annex provides the most modern methods of pest control for food companies.

Examples of devices for exterminating flying insects

To efficiently control flying insects in the shopping area, in back rooms of work areas, and at food industry companies, where there are no open food products and raw materials, using industrial insecticidal lamps with a high range of action is recommended. A special light spectrum attracts flying insects inside the device equipped with a high voltage metal grill (electrode); insects die instantly upon contact. Dead insects accumulate in the bottom tray of the lamp. The tray can be removed and easily cleaned.

In facilities designed for cooking (e.g., kitchens), food-processing work areas, rooms with open food, grocery departments of sales rooms, using insecticidal lamps with a sticky screen is recommended to avoid insects getting in the open food. When approaching the lamp structure, insects adhere to the sticky surface (which needs to be changed every 4-6 weeks). The primary advantage of the sticky screen compared to the electric grill is that the screen reduces the risk of contamination with particles of insects.

Specially designed insecticidal lamps are used for efficient flying insect control in open air spaces at the company. A special light spectrum attracts flying insects inside the device equipped with a high voltage metal grill (electrode); upon contact insects die instantly. Dead insects accumulate in the bottom tray of the lamp. The tray can be removed and easily cleaned.

Pheromone traps are widely used throughout the world. Pheromones are biologically active substances discharged by insects to attract their own species. Laboratory synthesized pheromones are used as bait in insect pheromone traps. Pheromone traps are absolutely harmless to humans and the environment.

Fumitox is an adhesive tape for flies with an attractant agent. Composition: adhesive base without insecticides, including attractant, casein, rubber, vegetable oil, polypropylene, stabilizer, and wax.
Examples of means of rodent control

Mouse House. The operating principle is based on natural animal behavior and lifestyle. To shelter mice and other rodents use holes, voids and cracks, arranging accommodations in nooks on the premises. The trap is an imitation of a shelter, which attracts rodents. The trap is placed next to walls along which the mice usually move. The only thing the rodent does is enter the trap. After that, the plate lever moves, pushing the rodent into the trap section, from which the rodent cannot escape. A mousetrap with a winding mechanism can contain up to 25 mice. The trap design does not envisage any chemicals, which makes the trap safe (but not kind to rodents).

A standard mousetrap

Rodents are caught in the trap when moving in the room in a natural way. Once in, the rodent will be struck by an electric shock and die within seconds. The blinking of the trap’s green indicator means that a dead rodent is inside and needs to be removed.

When the rodent touches the sensor pad inside, the doors shut and are locked. A portion of carbon dioxide is released inside the trap from a special gas cylinder immediately. The mouse loses consciousness within 10 seconds and dies in another 35 seconds. A flashing light indicates that a rodent has been caught. The device sends an SMS or an e-mail message to a computer (or a mobile phone), the site owner, and the central computer.

Adhesive tape

Recommended bird control methods

The integrated bird control and monitoring system reducing the number of granivorous species of birds (pigeons, crows, sparrows, jackdaws, etc.) that cause economic damage and act as sources of many infectious diseases plays an important role in multiple bird control methods. Establishing unbearable and uncomfortable nesting, living, nourishment, and reproduction conditions are the basis of methods that fight pest bird populations.

The basis of biotechnologies to reduce the number of birds with a high efficiency rate (up to 70 percent) are the principles of flexible combinations of different methods affecting bird populations (adhesive traps, poisoned baits, repellents, mechanical techniques, frightening devices, etc.).

The efficiency of measures to reduce the number of pest birds is very dependent on the peculiarities of the site, the nutrition base, possibilities of nesting during the day and at night, territorial connection of the site to the terrain, the frequency of bird migrations, and the composition of species.
Methods that reduce the number of bird roost sites

Any means that reduces the number of roost sites significantly lessens the comfort of these sites for birds. Such means can be presented by different studs, wire or netting stretched over the surface; birdlime, which creates a sticky surface; flexible constructions, which create interferences for sedentary birds; hoops, which do not allow seagulls to sit on a flat surface; and protective guards, which prevent birds from sitting on wires or insulators.

Methods generating general discomfort

Flash lights, laser systems, movable shiny objects, tapes, disks, ultrasound, water spraying, repellents: these items prevent birds from executing their daily routine.

Bright light is used to frighten birds away. A powerful lamp emits short flashes of different colors that are misleading to birds. Laser beams have a similar effect. Since they are directed beams, lasers may be applied in places where flashlights are not applicable. For example, to prevent birds from roosting in warehouses, laser beams can be targeted directly at the expected spots where the birds gather at night without affecting areas where people may appear.

Methods simulating a predator

These are static stuffed predators, simulation of their eyes, moving eyes of a model predator, jackstraw hunters, and acoustic signals: distress calls, predator calls (wings flapping in doves), shots, and screams of predators.

Methods blocking nesting sites

All of the aforementioned methods may be unsuccessful in attempting to frighten nesting birds away. If preventing nesting of birds in some areas in needed (production facility, work areas, attics, certain trees, etc.), the best solution is to apply preventive measures depriving birds of comfortable nesting spots.
DRAFTING A PROGRAM TO MANAGE PERSONAL HYGIENE AND TO TEACH HYGIENIC SKILLS IN THE ORGANIZATIONS ENGAGED IN PRODUCTION, MARKETING, STORAGE, AND TRANSPORTATION OF FOOD RAW MATERIALS AND FOOD PRODUCTS

Hygiene training in companies engaged in production, marketing, storage, transportation of food raw materials and food products will be organized according to a plan/schedule approved for the current year. The training program will be created according to the type of production. However, there are general rules to understand. For example, intestinal infections and food poisoning proliferate because of poor hand washing and bad sanitary treatment of hands; continuing to work when one is sick; cross-contamination of food; failure to comply with technological instructions; and failure to comply with storage conditions and the shelf life of food products.

A person working with food will define intestinal infections and food poisoning as diseases caused by consuming food that does not conform to corresponding TLNA requirements. The person is aware that food contaminated with pathogens has the same appearance, smell and taste as uncontaminated food.

A company employee engaged in production, marketing, storage, transportation of food raw materials and food will know the methods applied in production in order to prevent spreading intestinal infections. The methods include proper hand washing and sanitary treatment of hands after every possible hand contamination; only healthy workers perform professional duties; methods to store and handle food preventing contamination will be applied; cooking any food of animal origin at required temperatures for a required period of time; and maintaining proper high or low storage temperatures (complying with storage conditions). The employee will understand that the symptoms of intestinal infections and food poisoning can be different; and the employee will know that such symptoms can include diarrhea, vomiting, high fever, convulsions, and nausea. As such, depending on the cause of the disease, symptoms may develop within a few minutes and a few days. Some symptoms may continue for several days and even cause death.
A company employee will know that working or direct contact with food is prohibited, if the person has an infected abscess, a burn, a cut or a sore area on his or her hand. In such a case, the person may be engaged in processes having no direct contact with food, only after the infected skin area is covered with a special bright color band aid different from the color of the food product or the wound is closed with a clean bandage and protected with gloves (other than latex).

**Hand washing is divided into two levels**

- **Household level** (mechanical treatment, which is hand washing);
- **Hygienic level** (hygienic treatment of hands with disinfectants approved by the Belarus Ministry of Healthcare for use in companies engaged in production, marketing, storage, transportation of food raw materials and food).

The purpose of the mechanical treatment (washing) of hands is mechanical purification of skin from organic and inorganic contaminants and partial removal of transient microbial flora from skin.

Liquid pH-neutral soap is used, preferably without an acrid smell. Soap with antibacterial and bacteriostatic additives is recommended. Liquid soap will only be dispensed by dosing devices excluding the possibility of contacting hands. Open liquid soap can get infected with microorganisms, which is why adding a fresh portion of soap into dispensers without cleaning them first when empty (full or partial) is prohibited. A corresponding procedure/instruction will be developed, with a designated person assigned the responsibility.

**Rules and sequence of mechanical treatment (washing) of hands**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Moisten your hands with water, lather and rinse.</td>
</tr>
<tr>
<td>3.</td>
<td>Rub one palm against the other one with progressive back-and-forth movements.</td>
</tr>
<tr>
<td>2.</td>
<td>Use enough soap to cover the entire surface of your hands.</td>
</tr>
<tr>
<td>4.</td>
<td>Use your right hand to rub the back surface of your left wrist, interlace the fingers; then change hands.</td>
</tr>
<tr>
<td>5.</td>
<td>Interlock the fingers of each hand, connecting the inter-digital folds, and rub the surfaces of the fingers with up-and-down movements.</td>
</tr>
<tr>
<td>6.</td>
<td>Interlock the fingers with the back side of the folded fingers rubbing the palm of the other hand.</td>
</tr>
</tbody>
</table>
7. Place the thumb of your left hand between the thumb and forefinger of the right hand in a rotational movement. Do the same with your wrist. Change hands.

8. Use circular motion to rub the palm of your left wrist with the fingertips of your right hand, and then change hands. Rinse your hands.

9. Thoroughly wipe your hands with a paper towel/hand towel.

Every movement is repeated at least 5 times. Hand washing continues for 40 to 60 seconds.

The description of this hand washing technique is important to note because specialized studies have proven that certain skin spots (fingertips and their internal surface) remain contaminated after routine hand washing. In some cases, double hand washing is required.

Hands will be washed twice: After using the bathroom before exiting and putting on overalls; and in the workplace just before work begins.

The purpose of hygienic treatment is to exterminate skin transient microbial flora with disinfectants for the hygienic treatment of hands.

Hygienic treatment of hands will be performed after mechanical treatment (washing) of hands, when necessary to mechanically clean hand skin from organic and inorganic contaminants. If mechanical cleaning (washing) is not required, hygienic treatment may be performed without preliminary washing in the following cases:

- Prior to work;
- Each time after leaving the production room and returning to the production area;
- After using to the bathroom facilities;
- During work processes, after touching objects that may contaminate the hands.

Hygienic treatment of hands is performed with disinfectants approved for this purpose by the Belarus Ministry of Healthcare and according to operating instructions approved by the ministry.

Rules and sequence of movements during hygienic treatment of hands

Workers of organizations engaged in production, marketing, storage, and transportation of food raw materials and food will know the following rules of quality hygienic treatment of hands:

- Nails will be clean, short cut, without nail polish;
- Hands and fingernails will be manicured;
- Hygienic hand treatment agent will be taken from a dosing device into the deepening of the palm (make sure only to use the dosing devices that exclude the possibility of contacting hands);
- An alcohol-based agent for hygienic treatment will be rubbed into dry hands only;
- Hands will be moistened with the agent throughout the entire exposure time; then the agent is rubbed on the hand skin until the agent dries (if the exposure time is not as long as it should be, then the efficiency of treatment is in question);
- Only agents restoring skin fat and having components to nourish the skin will be used.
Hygienic treatment of hands is performed in the following sequence:

1. Pour enough antiseptic in cupped hands to cover the entire hand surface with the agent (3 ml)
2. Rub one palm against the other.
3. Use your right hand to rub the back surface of your left wrist, interlacing the fingers; then change hands.
4. Interlace the fingers, rubbing one palm against the other.
5. Interlock the fingers with the back side of the bent fingers rubbing the palm of the other hand.
6. Clasped your left thumb with your right palm and rub in a circular motion; then change hands.
7. Use a back-and-forth circular motion for rubbing your left palm with your fingertips clenched; then change hands.
8. Once dry, your hands are safe.

Every movement is repeated at least 5 times. Hand treatment continues for 30 to 60 seconds.

To verify whether the training on hand washing and hygienic treatment of hands is correct and to determine the level of hygiene at a manufacturing facility, swabs for microbiological analysis are taken from the employee's hands. If the hands carry bacteria of the E. coli group, this indicates poor or undue washing and hygienic treatment of hands, which violates personal hygiene rules.

**Monitoring employee health status**

In case of symptoms of gastrointestinal diseases, high fever, suppuration, and symptoms of other diseases, employees of the organization will immediately report this to his or her supervisor.

Checking the skin condition is necessary, as matured scratches, racomas, and cuts accumulate a large number of unsafe pathogenic streptococcosis and staphylococcus. These are pathogens of some diseases and food poisoning agents. Skin furunculosis and styes are diseases characterized by pus accumulation. Workers with matured wounds and furunculosis are not allowed to work with food.

In the case of an uncomplicated cut or burn, the wounds will be treated by hydrogen peroxide, iodine, then covered with a band aid; a finger stall will be worn on a finger. To work with open wounds is prohibited. Every production site will have a fully assembled first-aid kit.

Employees will not have acute diseases of nasopharynx and oral cavity. Poor hygiene leaves food particles in the mouth cavity; the particles accumulate between the teeth, decay and contaminate the cavity. Due to this, a foul odor is generated, and putrefactive microbes are reproduced which in turn leads to tooth infections, stomatitis, and inflammation of the respiratory tract. When coughing, sneezing or talking loudly, the bacteria contained in saliva drops and mouth and nasopharynx mucus can infect food.

In this regard, especially hazardous are people with influenza, sore throat or acute respiratory infections because of the increased amount of pathogenic staphylococcus. This microorganism perfectly adapts to living in the environment and even reproduces in refrigerators. Settling and accumulating on food, pathogenic staphylococcus can cause a food poisoning outbreak. In extreme
cases, if the symptoms are light, an employee may work in indirect contact with food, but only if wearing a surgical mask and using disposable paper handkerchiefs.

If there are symptoms of intestinal disorders (loose stools, high fever, vomiting, nausea, abdominal pain), the employee will be suspended from work and sent to an infectious disease specialist at an outpatient clinic near his or her place of residence. Even if the symptoms are light and the personal hygiene rules are strictly followed (hand washing, etc.), the employee poses a serious hazard to food safety. Employees will not self-medicate: normalization of stool and subjective well-being do not indicate full recovery. Improper treatment can develop bacteria carrying capacity; when a person feels well, pathogens are still in his or her body, and they discharge.

Bacteria carrying capacity is incurable in most cases; therefore, if a routine medical examination detects an asymptomatic carrying of pathogens, the person will be suspended from working with food according to valid legislation.

**The employee of the food facility will:**
1. Care about his or her appearance and behavior.
2. Not start working, if he or she has a high fever and sore throat.
3. Not start working, if he or she has diarrhea.
4. Not start working, if he or she has vomiting symptoms.
5. Not start working, if his or her skin turns yellow or his or her urine is as dark as the color of a strong tea.
6. Report to his or her supervisor, if any of the above symptoms occur.
7. Contact a healthcare organization, if any of the above symptoms occur.

**A control checklist for training and skills assessment:**
1. Who is responsible for monitoring health status and personal hygiene in organizations engaged in production, marketing, storage, transportation of food raw materials and (or) food products?
2. Personal hygiene and behavior rules.
3. What do you do if you are at work and you feel sick?
4. What are the five symptoms reportable to your supervisor (if you experience any of these symptoms)?
5. When is it necessary to wash your hands?
6. When is it necessary to wash your hands twice?
7. What is the hand washing technique?
8. When is it necessary to do hygienic treatment of hands?
10. How to put on overalls correctly?
11. What happens to overalls and footwear after a shift?
12. Rules of conduct in the workplace.
13. Rules for using bathroom facilities.
14. Eating and smoking rules.
15. Rules for using a mobile phone.
16. Rules for handling jewelry, wrist watches, pens and other objects.

**Some recommendations on selecting special footwear and clothes**
To maintain performance, appearance and comfort, special footwear will be given for utilization depending on the purpose and size.
After work is completed, footwear will be cleaned of contaminants without damaging the material outside and inside the footwear; the footwear will then be wiped and left in an open and expanded shape for airing and drying (away from heaters) or dried by special dryers.

After a shift, leather footwear will be covered with greased shoe cream systematically at least once a week.

Cleaning footwear by organic solvents is prohibited.

Footwear can be worn nonstop for up to 9 hours.

### Leather shoes labeling

<table>
<thead>
<tr>
<th></th>
<th>For abrasion protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mn</td>
<td>For protecting toes from kicks with the energy of 200 Joules</td>
</tr>
<tr>
<td>Mun200</td>
<td>For contacting hot surfaces with the temperature of 45 °C and above</td>
</tr>
<tr>
<td>Tp</td>
<td>For temperatures down to minus 20 °C</td>
</tr>
<tr>
<td>Tn20</td>
<td>From general production pollutants</td>
</tr>
</tbody>
</table>

There are different types of rubber boots: general purpose rubber boots, short general purpose rubber boots, rubber boots with non-slip soles, acid and alkali resistant rubber boots, frost proof rubber boots.

### Working clothes will be selected depending on the labeling on the size tags of the clothing

<table>
<thead>
<tr>
<th></th>
<th>DO NOT WASH</th>
<th>DO NOT IRON</th>
<th>DO NOT TUMBLE DRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>⚠️</td>
<td>HAND WASH</td>
<td>IRON, LOW (UP TO 110°C)</td>
<td>TUMBLE DRY, NORMAL, MEDIUM HEAT</td>
</tr>
<tr>
<td>⚠️</td>
<td>MACHINE WASH, WARM (40 °C)</td>
<td>IRON, MEDIUM (UP TO 150 °C)</td>
<td>DRIP DRY</td>
</tr>
<tr>
<td>⚠️</td>
<td>MACHINE WASH, HOT (60 °C)</td>
<td>IRON, HIGH (UP TO 200 °C)</td>
<td>DO NOT BLEACH</td>
</tr>
<tr>
<td>⚠️</td>
<td>MACHINE WASH, HOT (BOILING)</td>
<td>DO NOT DRY CLEAN</td>
<td>BLEACH WHEN NEEDED</td>
</tr>
<tr>
<td>⚠️</td>
<td>DRYCLEAN, ANY SOLVENT EXCEPT TRICHLOROETHYLENE</td>
<td>CHLORINE BLEACH WHEN NEEDED</td>
<td></td>
</tr>
</tbody>
</table>
Annex 9

EXAMPLE OF A SERVICE SPECIFICATION

Approved
Food Safety Team Leader
_______________________ (name)
_____________________ “____”, 20___

Washing Sanitary and Working Clothes

<table>
<thead>
<tr>
<th>Process Name</th>
<th>Process Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief service description</td>
<td>Contract washing</td>
</tr>
<tr>
<td>Possible hazards of the service</td>
<td>Contamination of sanitary and working clothes in washing</td>
</tr>
<tr>
<td></td>
<td>Contamination of sanitary and working clothes after washing</td>
</tr>
<tr>
<td></td>
<td>Poor washing quality</td>
</tr>
<tr>
<td>Service regulatory requirements</td>
<td>STB 289-2003 “Domestic services. Laundry processed items. General specifications”</td>
</tr>
<tr>
<td>A brief description of the regulatory requirements</td>
<td>Processed items will be clean and free of dirt and foreign smells; the color and pattern of colored clothes will remain as they were before processing. Items will be evenly dried and well ironed.</td>
</tr>
<tr>
<td>Customer requirements</td>
<td>Laundry service will be certified. Sanitary clothes and overalls will be washed separately, without the clothes of third parties. Washed, ironed and folded sanitary clothes and overalls will be packed in plastic bags provided by the contractor. There will not be cross-contamination of clean sanitary clothing and overalls at the stage of storing the clothes in the laundry facility. Normative documents will be provided upon first request; the documents will show that the washing detergents have been approved for use by competent authorities.</td>
</tr>
<tr>
<td>Service acceptance criteria</td>
<td>Service delivery term Quality (visual inspection to meet the STB 289 requirements)</td>
</tr>
<tr>
<td></td>
<td>The acceptance certificate for work performed will contain information about the detergents used for washing.</td>
</tr>
<tr>
<td>Officer responsible for controlling service delivery</td>
<td>Deputy general director for production</td>
</tr>
</tbody>
</table>

Specification developed by: __________________ FULL NAME (signature, date, position)
Annex 10

EXAMPLE OF A STERILIZED MILK PRODUCTION FLOWCHART

<table>
<thead>
<tr>
<th>No.</th>
<th>Production Process Phase</th>
<th>Phase Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Procurement of raw materials</td>
<td>Purchasing raw materials from suppliers ensuring safety of the raw materials with accompanying documents proving the quality and safety of the raw materials.</td>
</tr>
<tr>
<td>2</td>
<td>Transportation of raw materials</td>
<td>Transportation in sealed haulers, accompanied with a sanitary passport; the required conditions of transportation are met.</td>
</tr>
<tr>
<td>3</td>
<td>Incoming control</td>
<td>Incoming control of raw materials and auxiliary materials is made by the laboratory of the company according to the instructions for the technical, chemical and microbiological control at the dairy industry companies, approved by the established procedure, and according to standards on research methods specified in technical conditions for this food product.</td>
</tr>
<tr>
<td>4</td>
<td>Cleaning, cooling, storage</td>
<td>Milk selected according to the safety indicators is cleaned by mechanical filters, immediately cooled down to 4±2 °C and pumped into intermediate storage tanks. The duration of raw milk storage at a temperature of 4 °C is up to 12 hours; a temperature of 6 °C is up to 6 hours.</td>
</tr>
<tr>
<td>5</td>
<td>Milk separation</td>
<td>Part of the milk is separated in cream separators in order to remove cream or skim milk.</td>
</tr>
</tbody>
</table>
Milk is normalized by mass fractions of milk fat and protein in such a way that the mass fractions of fat and proteins in normalized milk correspond to the mass fractions of fat and proteins in the end product. Milk fat is normalized as follows:
- cream is added to unskimmed milk;
- skim milk is added to unskimmed milk
Milk protein normalization can be made by mixing milk batches having different protein mass fractions.

Normalized milk is supplied to the Reda pasteurized milk processing line where the milk is cleaned on a separator, then on a bactofuge, and then pasteurized at a temperature of 76±2 °C with nominal exposure time of 20 seconds (exposure time depends on design peculiarities of the equipment) and cooled to 4±2 °C.

Chilled pasteurized milk is supplied to the tank for intermediate storage prior to further processing. Maximum safekeeping of pasteurized milk is 24 hours prior to sterilization.

Milk is supplied to the deaerator, where negative pressure (0.5-0.6 bar) removes gases and unpleasant odors. Milk is homogenized at 12-18 bar pressure.

Milk is sterilized at a temperature of 140±2 °C; releasing time of 6 seconds is due to design peculiarities of the equipment.

Sterilized milk is chilled in the regeneration and cooling section with water at a temperature of 20-25 °C.
Sterilized milk goes from sterilizing unit through aseptic pipelines to the following:
— Directly to filling (bottling);
— First to the aseptic tank, then to filling.
Sterilized milk can be maintained in an aseptic tank prior to filling for up to 12 hours.

Filling of sterilized milk is performed under aseptic conditions with machines for aseptic milk filling of packages made of composite material (up to 1.0 dm³). Packaging material is sterilized by hydrogen peroxide.

Blocks of bags in heat-shrinkable tape or in cardboard trays are stacked on pallets for transportation of food and sent to dry chambers (temperature: from 0 °C to +20 °C) where sterilized milk is chilled below +20 °C for up to 24 hours; the production process is then considered finished. The product will be protected in storage from direct sunlight.
Expiration date: sterilized milk, 5.0% fat, combined material packing 1.0 1: 4 months after manufacture date stored at 0°/+20 °C according to STB 1746.
Suppliers evaluation methods

1. Beef (half carcass) supplied by Pervoye Maya Agricultural Works.
2. Beef (half carcass) supplied by Vesna Agricultural Works.

The suppliers of the core food raw material are evaluated according to the following criteria:

- Number of rejected product consignments per year;
- Implementation of a food safety management system;
- Promptness of raw materials delivery;
- Implementation of production sanitation programs, etc.

<table>
<thead>
<tr>
<th>Beef, half carcass</th>
<th>Number of rejected product consignments per year</th>
<th>Food Safety Management System in place</th>
<th>Production control program</th>
<th>Promptness of raw materials delivery</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pervoye Maya Agricultural Works</td>
<td>2</td>
<td>In place</td>
<td>In place</td>
<td>The delivery schedule is maintained</td>
<td>Reliable (approved)</td>
</tr>
<tr>
<td>Vesna Agricultural Works</td>
<td>10 (due to presence of antibiotics)</td>
<td>No</td>
<td>In place</td>
<td>1 untimely delivery</td>
<td>Unreliable</td>
</tr>
</tbody>
</table>

Based on the available information, Pervoye Maya Agricultural Works is a reliable supplier, and Vesna Agricultural Works has been deleted from the list of reliable suppliers.

The suppliers of auxiliary raw materials and packing are evaluated based on the following criteria:

- Implementation of a food safety management system;
- A set of documents proving quality and safety of the supplied raw material;
- Number of rejected product consignments per year.

<table>
<thead>
<tr>
<th>Sausage casing</th>
<th>Number of rejected product consignments per year</th>
<th>Food Safety Management System in place</th>
<th>A set of documents proving quality and safety of the supplied raw material</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westcom OJSC</td>
<td>1</td>
<td>No</td>
<td>In place</td>
<td>Reliable (approved)</td>
</tr>
<tr>
<td>Ukrvak SLS</td>
<td>2</td>
<td>No</td>
<td>Late filing of analysis certificates</td>
<td>Unreliable</td>
</tr>
</tbody>
</table>

Based on the available information, Westcom OJSC is a reliable supplier, and Ukrvak SLS cannot be shortlisted as a reliable supplier.
How to Participate
in the IFC Belarus Food Safety Project

Within the framework of its Belarus Food Safety Project, the International Finance Corporation (IFC) holds educational workshops and trainings on different aspects of food safety for representatives of control agencies, company managers and specialists in Minsk and regional cities in Belarus.

International Finance Corporation also renders consulting services to food operators on development and implementation of the Hazard Analysis and Critical Control Points (HACCP) system, ISO 22000 system and other food safety management systems. Such services include invitation of European and Belarusian experts for diagnostic field visits to manufacturers, providing recommendations and action plans for system audit-based implementation, prerequisite programmes’ development, staff training, pre-selection of food safety management system most suitable for company’s requirements, consulting support throughout the entire process of implementation and certification in accordance with the Food Safety System Certification (FSSC 22000) or other schemes. There is also a specific consulting programme for SMEs.

You are welcome to participate in the IFC Belarus Food Safety Project:
• If your company is in the process of implementation or has planned introduction of the HACCP, FSSC 22000 or ISO 22000 Standard and is in need of consulting assistance;
• If you want to take part in trainings, workshops and focus groups on food safety; and
• If you want to share your experience of implementing food safety management systems.

Contact information:
International Finance Corporation Office in Belarus
IFC Belarus Food Safety Project
6a Partizansky Avenue, 4-th floor, Minsk, 220033, Belarus
tel.: +375 17 228 18 38, 228 17 79
E-mail: osherbina@ifc.org
Web-site: www.ifc.org/belarus/fs
In order to improve awareness of managers and specialists of food business operators and develop skills of establishing and running food safety management systems, specialists of the IFC Belarus Food Safety Project have developed a package of informational materials for food safety trainings under the name “Compliance with the Prerequisite Programs is a Foundation for Food Safety Management Systems and HACCP Principles”.

Teaching materials endorse the following aspects of Prerequisite Programmes:

- Construction and planning of buildings and corresponding engineering communications;
- Planning of premises, including planning of working and amenity places;
- Ventilation, running water, electricity and other engineering communications;
- Solid waste and waste water disposal;
- Availability of equipment;
- Procurement management;
- Measures aimed at cross-contamination prevention;
- Cleaning and sanitary treatment;
- Pest control;
- Personal hygiene;
- Secondary processing;
- Recall procedures;
- Storage;
- Product information and consumers' awareness; and
- Food products' safety, awareness and bio-terrorism.

A package of methodological materials should be an integral part of food safety premises' equipment and a sort of a trademark demonstrating the level and status of food safety in the company.

Main areas of food safety premises' activities should be the following:

- Providing workshops, lectures, talks and consultations on food safety issues, personal hygiene, cross-contamination prevention measures and interaction with food chain participants;
- Providing hygiene training, thematic trainings with the workers subject to requirements on specific knowledge on food safety and sanitary regulations; and
- Organizing exhibitions, displays, stands, prototypes and other forms of visual advertising and propaganda.

A package contains eighteen 60x80cm-posters made of strong, water-proof PVC fabric suitable for both outdoors and indoors application. Each package is equipped with a convenient bag for transportation.

For a purchase invoice you are kindly asked to fill in an order invoice and send it to the following fax number: +375 17 271 91 60 or e-mail address: norminfo@tut.by

We will be happy to answer all your questions and provide you with additional information at: +375 17 271 91 60 or in the office of NORM Info Group – IFC Project Partner - at the following address:

46 Gurskogo Street, office 23, Minsk, 220089, Belarus

Price of a package of methodological materials is:

Two million and three hundred thousand Belarusian Roubles (2,300,000 BYR)
In partnership with the Austrian Ministry of Finance