

# A Guide to Contamination Prevention in Food Manufacturing

Read this guide to strengthen your contamination policy



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There are many factors that will affect your contamination policy, which we will discuss in this guide:

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## Personnel and Practices

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Because personnel handle the food in your warehouse, their practices are closely tied to food safety from contamination. It is the job of the manager in food operations to ensure that all personnel comply with the official contamination policy.

To do this managers must oversee the training of personnel on food protection principles and food handling techniques. A training program for permanent, temporary, as well as contract employees needs to be created, evaluated each quarter, and updated if necessary.

**“It is the job of the manager in food operations to ensure that all personnel comply with the official contamination policy.”**



The training should cover:

### 1. Disease control.

Microbial contamination is a risk for personnel with contagious illnesses.

Make sure that:

- You keep personnel away from areas where contamination may occur if they have open lesions, boils sores, infected wounds, or anything else that could contaminate foods or food contact surfaces with microorganisms. This includes areas where personnel would contact food, food contact surfaces, or packaging materials.
- You keep personnel away from the entire facility if they have a contagious disease.

- Personnel should report conditions to their supervisor until the condition is corrected.
- Personnel should report any exposure outside the workplace that would pose a risk to the work environment.
- Cross contamination between 'dirty' and lean areas is strictly controlled through separation of personnel and equipment.
- Visitors follow the same procedures when entering the facility.

A policy that outlines employee health must be created, distributed, and routinely reinforced to reduce the risk of potential contamination.

## 2. Hygiene and cleanliness.

You should make sure that all employees

- Wear clean garments suitable for their activities. Jewelry or other objects must be removed as they can be a source of microorganisms.
- Wear clean footwear that is appropriate for the work environment, and available for use in production areas.
- Clean and maintain uniforms on a regular basis (if uniforms are provided). Only impermeable gloves should be used and kept clean and sanitary during use.
- Ensure that outside clothing is clean and sanitary if they are allowed in production areas.
- Ensure that they wear effective hair covering, including facial covering, where products, food contact surfaces, and packaging materials are exposed.
- Store personal items such as foods, beverages, medicine, chewing gum, tobacco products in the storage unit provided. These items need to be confined to break rooms, offices, or other designated areas of the facility to prevent product contamination.

- Take precautions to prevent contamination from foreign substances like perspiration, cosmetics, chemicals, fingernail polish, and medicines applied to the skin.

Thorough hand washing before commencing work and after using the restroom is extremely important, as contaminated hands can transmit infectious diseases.

You must not assume that employees will know the correct procedure for washing hands.

Circulate the following instructions or perhaps post it around your facility:

1. Wet hands with clean warm or hot water
2. Apply soap
3. Scrub hands and fingernails for 20 seconds
4. Rinse off soap thoroughly with clean water
5. Dry hands with single-use towels
6. Discard used towels in trash
7. Sanitize hands with an appropriate sanitizer (no touch dispensing systems)
8. Dry hands

Personnel must maintain personal hygiene by washing hands prior to work, when hands are soiled, after eating, and after using restrooms. Any employees who have contact with food or cigarettes should also wash and dry hands before returning to their workstation.

**“All training should be compliant with industry regulations, and documented for each individual.”**

## 3. Training and education.

You must make sure to provide:

- Extensive training, education, and experience to personnel responsible for identifying sanitary failures or food contamination for production of clean, safe food.
- Training to food handlers on food handling techniques and food protection principles.
- Special training on food allergy so workers understand the need to prevent cross contamination and mislabeling.

All training should be compliant with industry regulations, and documented for each individual. The level of understanding required will depend on the type of operation, task, and assigned responsibilities. At the very least workers should understand how personal hygiene and unsanitary practices impact food safety.

You should use formal presentations, one-on-one instruction, or demonstrations depending on what is appropriate for the situation.

Additionally you should make sure that no glass is allowed inside the production area.

## Building & Facilities

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All food processing and storage operations must be designed to facilitate maintenance and sanitation operations. This encompasses:

### 1. Exterior grounds.

The exterior grounds around your operation need to be maintained to protect against pests and contamination from sources such as dust, dirt, or water.

To control pests around the building

- Frequently cut weeds and grasses
- Maintain waste disposal areas
- Eliminate standing water
- Use shrubs and trees that do not attract insects and birds
- Properly store idle equipment and parts that are left outside away from manufacturing buildings.

To prevent other sources of airborne dirt or contamination that could enter the operation, maintain roads, parking lots, and yard areas. Around the exterior building walls, provide for 'no vegetation' strips and cover the strip with crushed stone or a similar material. Eliminate any source of mud that could be tracked into the facility.

It is important to conduct formal audits in a routine manner so that corrections can be applied quickly if necessary.

**“The exterior grounds around your operation need to be maintained to protect against pests and contamination from sources such as dust, dirt, or water.”**

### 2. Facility construction.

For food operations to be conducted in a safe manner, buildings need to be constructed in the right way in terms of size and design.

You must make sure that the facility is

- A size that allows adequate moving of equipment in the course of production, maintenance and sanitation activities. Storage areas need to be of suitable size to facilitate good housekeeping practices.
- Designed to minimise the threat of contamination to food, food-contact surfaces, and food packaging materials. For example, by using enclosing systems, physical separation (walls or space), logical traffic flow patterns, appropriate air flow such as positive pressure in finished product area, line covers, adequate interior and exterior lighting, etc.
- Designed to control condensate, leaks or drippage

from walls, ceilings, pipes, ducts and roofs especially over product zones.

- Designed to control water from any source in production areas in order to prevent the risk of salmonella growth and potential product contamination.
- Designed to eliminate or protect glass by enclosing it (for example, in lighting fixtures, skylights, insect light traps) while still allowing for enough lighting to maintain sanitation.
- Constructed with materials and in a way that allows walls, ceilings, and floors to be sufficiently cleaned and kept in good repair.
- Provide adequate ventilation to control fumes such as from roasters and odors such as in trash disposal rooms.

This will ensure that food safety is not compromised.



“Doorways play a critical role in contamination control of your facilities”

### 3. Facility Doorways

Doorways play a critical role in contamination control of your facilities. Where possible, it is good practice to form Airlock entries into your facilities, to prevent contaminants entering critical hygiene areas.

Doorways should:

- Allow free movement of all expected traffic types and vehicles within your operations
- Close quickly and automatically, after use.
- Seal well when closed, to prevent passage of airborne contaminants or pests
- Where food contact with doors is possible, construction materials should be certified as food contact safe
- Placed strategically to provide separation between controlled zones of your facilities.
- Be of substantially robust design to allow for volume of traffic expected. Design should be such that will withstand minor impact from traffic.

# Sanitary Operations

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Effective sanitary operations are essential for food processing facilities. We will discuss what is involved in general maintenance, as well as provide a guide on how you should create a policy.



## 1. General maintenance.

Buildings, fixtures, and other physical facilities of the plant must be maintained in a sanitary condition and kept in repair to prevent food from becoming contaminated.

You should only store toxic materials necessary for use in the plant (eg. For cleaning, pest control, equipment maintenance, lab testing procedures, or plant operations).

Container disposal must be documented formally. Workers must be trained in how to use these sanitizing agents.

Food contact surfaces must be cleaned regularly so that food is not contaminated. Chemicals used on these surfaces must be food grade. Consult experts to choose appropriate sanitizing agents if you are unsure which the most effective sanitizers are for each purpose, and to learn how they are applied.

Portable equipment like fans and ladders must be properly cleaned and sanitized before use.

## 2. Policies and procedures.

To combat contamination, you must create appropriate cleaning and hygiene procedures.

Wet cleaning should include complete cleaning and sanitizing cycles. Partial wet cleaning without sanitizing should be avoided because sanitizing is required to inactivate microorganisms after cleaning.

Dry cleaning (using tools such as vacuum cleaners, brooms and brushes) may be followed by a wet cleaning as appropriate

(for example in buffer/vestibule areas).

Use dry cleaning as the routine cleaning practices.

Product accumulation (on walls, ceilings, conveyor belts, lids and walls of batch tanks or mixing tanks, and the bottom of a bucket elevator) should be removed through routine housekeeping – especially for products that are hygroscopic or in environments of high humidity leading to moisture absorption and localized condensation.

Remember to keep the air dry, including air entering the area and used to dry the product. If compressed air is used, continuously dry the air, as moisture may be trapped in the compressed air.

“To combat contamination, you must create appropriate cleaning and hygiene procedures.”

Here is a sanitation checklist for you to use:

1. Have you formed a multidisciplinary team?
2. Have you defined different areas within the facility in relation to hygienic requirements?
3. Have you established the required level of product protection using a risk assessment approach (your first priority should be to prevent product contact surface contamination)?
4. Have you created a map of the circulation of people, incoming materials, waste, etc. on a flow chart?  
If so, is access limited to essential persons or activities only?
5. Have you established barriers where appropriate and clearly defined their purpose? If so, are they practical for persons who enter the area regularly or for a specific purpose (eg. Sampling, maintenance)?
6. Have you considered elements like
  - a. drainage and floor slopes
  - b. drainage and equipment positions
  - c. personnel and material routes
  - d. rework handling
  - e. storage of spare parts
  - f. maintenance tools and cleaning equipment
  - g. fire protection devices
  - h. conveyors
  - i. waste collection
  - j. air conditioning
  - k. air handling system
  - l. ‘clean-in-place’ circuits?
7. Have you defined construction and equipment design standards to meet hygiene requirements?
8. Have you established routine procedures that describe what can and cannot pass barriers, and the procedures for passing them?
9. Have you established procedures to monitor and document barrier efficiency?
10. Have you established procedures for maintenance, including routine and unscheduled maintenance?
11. Have you established a master sanitation schedule to assure timely and effective sanitation of equipment and the processing environment?
12. Have you trained all personnel about the barriers and procedures, their purpose, use and maintenance?

You must retrain personnel as often as necessary to maintain sanitary practices.





### 3. Facilities and controls.

All food processing plants must be equipped with sanitary facilities. Here are some of the sanitary facilities that are required:

- A water supply of sanitary temperature and quality to meet processing, cleaning, and employee sanitary requirements.
- Plumbing which carries sufficient quantities of water throughout the operation, and properly removes sewage and liquid waste from the facility. You must not allow cross connections between discharge waste water or sewage and sanitary water. You must ensure backflow prevention into sanitary water systems.
- An easily accessible and adequate amount of toilet facilities maintained in a sanitary condition, with hand washing reminders prominently displayed.
- Hand wash stations located in production areas for convenience. These must be supplied with antibacterial soap in a sanitary dispenser, sanitary hand towels, and a trash receptacle (for disposal of used towels).
- Trash and production waste should be transported in a way that does not risk it becoming a source of contamination or pests.
- Equipment design, construction, installation and maintenance must contribute to cleanliness and non-contamination of products.
- Food contact surfaces and utensils should be corrosion resistant, non-toxic, cleanable, and capable of withstanding the production environment.
- Protection should be provided where there is potential of indirect contamination of food surfaces (eg. A cover over a conveyor moving open containers).
- Seams in food contact surfaces of equipment must be continuous and smooth to minimise the potential for food contamination.
- Freezers and refrigerated rooms need non-glass calibrated thermometers or temperature recording devices. Refrigerated storage rooms should be provided with humidity recorders.

Make sure safeguards are applied to prevent contamination from compressed air or other gases. If they are introduced into foods or onto product contact surfaces they can be a source of contamination with water, oil or microorganisms.

## Pest Control

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Pests like rodents, insects, birds and other types of animals must be prevented from entering any area of the food plant. Since many of them are capable of movement, you must develop and implement an effective pest control program to prevent these problems from developing.

Prevention programs to prevent pest entry include trapping, elimination of harborage locations, using pesticides, and monitoring the pest control devices will help you be compliant.



Here is a pest control checklist for you to use:

- Have you ensured that all exterior doors are weather stripped and maintained on a continuing program?
- Are exterior doors kept closed when not in use?
- Have you installed automatic closures on exterior doors?
- Do you maintain adequate surface drainage?
- Are windows properly screened?
- Are exhaust fan louvers installed and maintained?
- Have you ensured that pesticides and other hazardous chemicals are properly stored, marked and used?
- Do you use tamper-proof, covered bait stations of a type and location to minimise spillage?
- Have you made sure to use bait stations for exterior use, and mechanical traps for interior spaces?
- Do you monitor mechanical devices at least weekly?
- Do you monitor bait stations at least monthly?
- Have you made sure that all rodent devices are numbered with the service date listed on the inside cover, where applicable? Do you have a map of these devices kept current and on file?



- Have you made sure to document all insecticide treatments to include date, operator, compound, concentration of active ingredients, amount used, where used (specifically), and how applied (specifically)?
- Do you ensure that written inspection and service reports are submitted after each service call and kept on file?
- Do you regularly check for rodent burrows in nearby grounds, and activity at floor/wall junctions and doorways?
- Do you regularly check for evidence of insect activity, especially in long-term supply and stock storage areas?
- Have you made sure that exterior grounds are well maintained with minimal plants?
- Are exterior grounds free of debris and stored materials near walls of the facility and any other objects that could harbor pests?
- Do you seal load levelers at docks to prevent trash accumulations and rodent harborage and entry? Do you clean load leveler pits regularly?

Make sure your processing plant is nowhere near livestock and poultry operations, as studies show that it will be especially vulnerable to pathogen contamination by pests.

## Pest control procedures checklist

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Pests/vermin, such as rodents, flying insects, crawling insects, and others must be kept out of a food facility. A proactive pest control plan will help to avoid contamination of food and product loss. Use the following as a starting point to inform your plan:

- Check there are no insects, rodents, animals, or birds
- Check there are no breeding or harborage conditions for insects or rodents (such as clutter, trash, pooling water or leaky plumbing, damaged/open food containers)
  - Does your monthly self-inspection procedures include monitoring for and eliminating rodent breeding and/or harborage conditions?
  - What will you monitor for to ensure no rodent breeding or harborage conditions are present on your premises?
- Check facility is vermin-proof (holes in floors or walls or ceilings, no screens on openable windows, or excessive gaps under or around openings to the outside)
  - Do you ensure that when doors are closed, they are closed all the way to the floor?
  - How will you ensure your facility is vermin-proof?
- Maintain an unobstructed distance from walls to pallets (paint a stripe)
  - How will you maintain an unobstructed space between walls and pallets (or other food/nonfood storage)?
- Use a licensed Pest Control Operator
  - Who is your PCO?
  - What is your PCO license number?
  - Does your PCO conduct inspections and provide recommendations as part of your service?
- Check approved pesticides used
  - Have you reviewed all pesticides used on the premises?
  - Are pesticides applied according to the use intended on the label?
- Number and map all devices/bait stations
  - How are bait stations/devices numbered and mapped?
- Use a weekly log (or daily if yours is a produce warehouse/farm packing operations, or a problem is noted)
  - How will checks be logged?
  - Who is responsible for checks of bait stations devices both inside and outside of the facility?
- Have a pest/vermin control service at least monthly. Servicing inside and outside no less than once per month (do not use bait stations inside)
  - How often does your PCO service your facility?
- Store records
  - Store all pest control service receipts (include environmental assessment as part of service agreement)
  - Map of all devices/bait stations
  - Weekly pest control inspection logs

**“A policy that outlines employee health must be created, distributed, and routinely reinforced to reduce the risk of potential contamination.”**

## Food security procedures worksheet

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Food facilities must take proper precautions to ensure food is not intentionally tampered with. Written procedures for food security should include the following:

- Assign someone in charge of security
  - Who is in responsible for security?
  - If applicable, where will you keep the testing records?
- Check in and identify visitors and employees
  - How will you check in and identify visitors?
  - How will you identify employees?
- Limit access to food areas
  - How will you restrict access to food storage areas?
  - How will you ensure proper supervision in food storage areas?
- Secure doors and windows
  - How will doors and windows be secured?
  - Install a fence around the perimeter if appropriate (and if approved by zoning or other ordinances)
  - Should fencing or walls be installed or maintained around the perimeter of your facility?
- Report unusual activity to manager/security
  - Are employees trained to be aware and report suspicious activity?
  - What are your procedures for reporting unusual or suspicious activity?
- Secure and test backflow prevention devices (if your devices are testable)
  - If applicable, how often will backflow prevention devices be tested?
- Secure and store ice machines inside the food facility
  - Where will you locate your ice machine?
  - How will you secure it
- Conduct background checks for new hires
  - How will you conduct background checks for new hires?
- Create and train employees on emergency evacuation procedures
  - Have you included a map and meeting location to account for all employees?
  - Who is your emergency contact person and the 24-hour number where they can be reached? Where will you post that number?
- Provide adequate lighting around the outside of the building
  - Is there adequate lighting on the outside of your building?
- Lock trailers unless loading or unloading, and never leave filled containers unsupervised
  - Who is responsible for loading and unloading trailers?
  - Are they kept locked when not loading?

## Food storage procedures worksheet

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Food must be stored in a way that it is protected from pests and contamination. If certain foods are not stored properly, microorganisms can grow. Include the below in your written procedures for safe food storage:

- 1) Provide adequate storage space
  - 2) Store nonfood items (including chemical and cleaning items) separate from food
  - 3) Secure poisonous/toxic chemicals not held for sale
  - 4) Separate raw animal foods from ready-to-eat foods
  - 5) Protect foods from contamination (proper packaging and coverage)
  - 6) Provide separate and labeled storage area for salvage items
  - 7) Implement procedures for
    - a) handling salvaged, expired, damaged or contaminated foods (include timely disposal of damaged, spoiled or expired products)
    - b) documenting disposition of these foods
  - 8) Rotate stock to ensure 'first in – first out' (FIFO)
  - 9) Provide adequate lighting and ventilation
  - 10) Assure food received is labeled
  - 11) Clean and organise food storage areas
  - 12) Maintain proper food storage temperatures
  - 13) Maintain an unobstructed, clearly delineated space between both interior and exterior walls and stored items
- Who is responsible for ensuring compliance with food storage procedures?
  - What procedures will you implement to ensure compliance with each of the items listed above?
  - Records
    - o How will you document and where will you store the monthly self-inspection report?
    - o How will you document and where will you store the disposition of salvaged, expired, damaged or contaminated foods?





When it comes to protecting your warehouse from external contamination, properly functioning doorways are absolutely necessary.

- Doorways that seal off areas of operation are required to protect your product from things like pests and vermin, as well as microbial contamination from separate processing areas, or worker's break areas.
- Doorways that respond well to vehicle collisions are necessary to keep operations up and running. If your door is easily damaged, then it will result in unnecessary production downtime, and potential exposure to contamination from pests and vermin.

This is why investing in a door that is durable (copes well with harsh weather and forklift accidents), can save you thousands of dollars in maintenance costs in the long run.

In fact, M. C. Herd, a large meat processing facility based in Victoria, are able to maintain an hygienic facility with their rapid doors.

[Click here to read their story.](#)



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