



TIP SHEET 25

EQUIPMENT SELECTION AND MAINTENANCE

It is understood that equipment selection will be specific to the site, location, and type of product being produced. Therefore, the SQF code details general guidelines for all sites to follow to ensure adequate food safety practices are being met, while still providing the flexibility for sites to choose equipment and maintenance routines that would be best suited for those individual sites.

LEARNING OBJECTIVES	APPLICABLE CODE ELEMENT(S)
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- UNDERSTAND THE INTENT OF THE SQF CODE AS IT PERTAINS TO EQUIPMENT SELECTION AND MAINTENANCE WITHIN THE SITE

- 11.2 CONSTRUCTION OF PREMISES AND EQUIPMENT

KEY TERMS

- FOOD-CONTACT SURFACE

The surface of equipment and utensils that directly contacts food.

- NON-FOOD CONTACT SURFACE

Exposed parts of equipment other than food-contact areas.

PROCESS STEPS

1. Know your location

The location and construction of food premises are to be such that neighboring buildings, farms, or factories do not introduce factors that could adversely affect the safety of food (e.g., spray drift from neighboring farms, air-borne pollutants from adjacent factories, etc.).

In most jurisdictions, the building and operation of the food premises is governed by local, state, and/or federal regulations. The site must be familiar with the applicable regulations and ensure that relevant permits, approvals and notifications are in place.

The site must ensure the premises and its surroundings are kept free of contaminants to the products from the external environment. The site shall maintain structures, instructions, procedures, etc. that verifies the control of external environmental conditions and for the safety of the process and/or product produced if applicable.

For food factories and storage facilities, measures may include protection of exposed products or materials from air-borne contaminants from neighboring facilities. Measures may include physical barriers, sealed factories, positive air pressure, etc.



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Sites must check with local authorities to establish the requirements. However, plans and specifications submitted to a local authority for approval may include:

- Locality map showing the site in relation to the area;
- Site plan showing all salient features of the site and a description of adjoining sites including the location of the premises north compass points, roads, storm water, waste water;
- Floor plans showing the layout of the premises, processing areas, permanent fixtures, and layout of equipment;
- Details of major items of equipment used in the processing area;
- A diagram of product/process flow;
- Specifications generally include details of construction materials, surface finishes (walls, floors, ceilings, etc.), product contact surfaces, essential services and the number of personnel;
- Refrigeration equipment and operating temperatures of cold storage rooms, storage capacity and means of loading into and out of cold stores need also be included. All applicable certificates or inspection documents from local, state, federal or international governing agency shall be current and kept on file.

2. Know your space

The construction of the material and surfaces used at the site shall be constructed in a way that would be easily cleanable and prevent contamination to the finished product or the process.

The main feature of an acceptable product contact surface is that it is impervious, non-corrodible, smooth, easy to clean, light colored, nontoxic and impact resistant. Stainless steel, aluminum, hot-dipped galvanized steel, fiberglass, polyvinyl chloride and nylon are examples of approved product contact surfaces. All other surfaces must be capable of being kept clean and preferably light colored. Documentation of product contact surfaces being in good condition can be accomplished by making this item a part of a monthly facilities checklist or other type of check list (See SQF Code for further information on construction and maintenance of floors, walls, ceilings, drains, catwalks, etc.).



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3. Choose the right equipment for your site

The SQF Code requires specifications for equipment, utensils and protective clothing, and procedures for purchasing equipment shall be documented and implemented. This is a general provision covering the condition and use of equipment, including utensils, benches, tables, bins, and protective clothing, so that they do not pose a threat to product safety. This also includes the provision that requires specifications for equipment, utensils, and protective clothing new to the site or being repaired or modified. Written procedures are required for the purchasing of equipment new to the site or being repaired or modified and the procedures are to be documented and implemented.

Food processing equipment shall be designed, constructed and maintained in accordance with manufacturer and/or industry standards. Metal frames, supports and brackets supporting sinks, wash basins, benches, tables and shelves are generally constructed of solid materials such as hot dipped galvanized iron, stainless steel or aluminum and securely fixed to the walls or on metal frames. Equipment shall be smooth-finished, free from angles, ledges and crevices and easy to clean. The open ends of tubular legs or rails must be sealed to prevent the accumulation of process waste and residues. Where equipment is dismantled for cleaning, it is to be designed free of loose bolts or nuts or other objects that could inadvertently find their way into a food product or provide points for accumulation of food waste.

Containers (e.g., tubs, bins, etc.) used for inedible food or materials must be clearly identified (i.e., color-coded or labelled). Containers previously used for pesticides, insecticides or other deleterious materials must not be re-used for product handling. Where protective clothing (e.g., gloves, face shields, etc.) is provided and used, it must be made of a material that is food-safe and is easily cleaned.

Sites need to consider the role of the new item and choose the right item to do the job. Written specifications are to be developed that includes the detailed description or features of the item.

The goal of the specification is to outline all the technical details and requirements that the site has in mind for the purchased item. Some things that may be considered for the specification document may include, but is not exclusive to the following:

- What is needed for the equipment and how the equipment will be used;
- Specific features, capabilities, or construction materials that are needed for that equipment;
- Durability of the item;
- Regulatory requirements;
- Manufactured and designed for use in a food site;
- Any required certifications or approvals (i.e., NSF, UL);
- Ease and use of cleaning;
- A receiving document to verify delivery and installation instructions;
- The type of power source;
- Quantity needed;



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- Plumbing needs;
- Drainage requirements;
- Special options or features (ventilation, etc.);
- Service or maintenance requirements;
- Warranty;
- Energy rating;
- Freight and delivery requirements;
- Tear down and installation requirements; and
- Cleaning limitations or requirements.

4. Purchasing Equipment

Written procedures for the purchasing of equipment are also to be developed. This procedure is to outline the process in which equipment is identified, purchased and installed on the site. The procedure will assist in the purchasing decisions and choosing the right equipment to handle the required task.

Some things that may be considered for the purchasing procedure may include, but not inclusive to the following:

- Regulatory requirements;
- The conditions and requirements when purchasing refurbished equipment;
- Members that are to be on the purchasing committee such as QA, sanitation, engineering; maintenance, etc.;
- Conditions; and
- Confirmation from equipment vendors on acceptance of specification prior to manufacturing, modification or repair and confirmation of any installation specifications that may affect food safety.

5. Maintenance of Equipment

Maintenance activities – both planned and breakdown – can have a major impact on food safety, if not effectively implemented. Maintenance procedures must be carefully planned, designed, documented and implemented to avoid contamination of product, materials or equipment and to ensure that maintenance staff, including contractors, understand the safety implications of maintenance activities.

The protocol must outline that maintenance staff and service contractors engaged to complete work in food production areas must observe all personnel and process hygiene requirements. Service contractors must be provided with protective clothing, as required.

The procedures must describe the practices under which repairs are to be completed in any product handling or storage areas including the following requirements that maintenance staff must observe:



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- Maintenance of equipment or building structures must be completed in a manner that does not pose a risk to the product, materials (including packaging materials) or equipment;
- The maintenance supervisors must ensure they are notified by all contractors engaged to complete work in any product handling areas. They must ensure that all service contractors are aware of the site's personnel hygiene requirements and that they are provided with any necessary protective clothing, or that protective clothing meets the same requirements as those of the site staff;
- Maintenance staff and service contractors must ensure that they account for and remove all tools and debris from any maintenance activity once it has been completed in any product handling area and inform the area supervisor so appropriate sanitation can be completed;
- Service contractors are to inform the maintenance supervisor if any required work poses a potential threat to product, packaging or equipment safety (i.e., pieces of electrical wire, damaged light fittings, loose fittings overhead, etc.). When necessary, maintenance must be conducted outside processing times;
- Service contractors shall notify the maintenance supervisor in the event of any breakage or damage that could expose products, packaging or equipment to contamination;
- Service contractors must notify the maintenance supervisor when work has been completed; and
- Plant supervisors and operators must ensure appropriate and effective clean up measures are taken once all maintenance or service contractor activity is completed and prior to the commencement of plant operations.

It is essential that site staff, maintenance personnel and service contractors adhere to the correct procedures when completing maintenance on all equipment. As part of maintenance procedures, repaired equipment must be inspected for missing parts (nuts, bolts, springs, etc.) prior to use. Those responsible for reporting and completing repairs and cleaning the equipment after repairs must be specified in maintenance procedures. The use of temporary fasteners such as string, wire or tape is not permitted.

Where machinery that exists over product lines or food contact surfaces requires lubrication, only food grade lubricant is to be used. Even then, food-grade lubricant is still a quality hazard and must be used sparingly to avoid contact with product. Where paint is used on equipment, roofs, walls or floors, it must be in good condition and suitable for use. Paint must not be used on food contact surfaces.



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RELEVANT RESOURCES

- NSF Food Equipment Certification Standards
<http://www.nsf.org/services/by-industry/food-safety-quality/food-equipment-certification/standards-certification>
- Food Standards Australia New Zealand - Standard 3.2.3 Food Premises and Equipment
https://www.foodstandards.gov.au/publications/documents/3_2_3.pdf