




# Food Safety Goals that Sanitary Design and Finishes Help to Solve



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## USDA, FSIS and FSMA Compliance and Validation

As part of the FDA (Food and Drug Administration), the FSMA (Food Safety Modernization Act) guides the food processing industry with sanitary design requirements that must be rigorous enough to withstand production, but also easily disassembled for proper cleaning during sanitation. While the processor is responsible for compliance, the equipment manufacturer should provide minimum sanitary design requirements following the 10 Principles of Sanitary Design, defined by the leading US meat industry association, NAMI (North American Meat Institute). 

To help meat processors validate sanitation protocols, equipment customized with access modification, innovative CIP (clean-in-place) and COP (clean-out-of-place) components, and high-end food contact area surfaces provide thorough and faster microbial-level cleaning. Depending on the meat processing application, a combination of equipment design options and finishing techniques can help meat processors improve ease and quality of sanitation that will fulfill FSIS (Food Safety and Inspection Service) compliance inspections.



Ground Beef Recalls Due to Salmonella at an All Time High






FSIS Reports Uptick in Foreign Material Contamination

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## Removal of Foreign Contaminants

Large-volume automation in the meat processing industry brings a higher risk of foreign material contamination. Foreign material can include metal shavings and shards from grinders, mixers and dicers, wood and nails from pallets, and numerous other materials like plastics and glass.

There are equipment options and proper maintenance practices that can help mitigate foreign material risk in food handling transfer areas.

- In areas where a tote dumper is used to transfer meat to secondary processing machines, equipment manufacturers can offer a PRS (Pallet Retention System) that removes the pallet out of the food transfer zone. 
- A drop belt conveyor can be included in system designs that provide repositioning of the meat product during conveyance to allow for visual inspection before the product is transported to downstream equipment and metal detection. 
- Magnetic grates on equipment food transfer areas is another protective device for metal contaminants. 
- The best way to limit foreign material such as nuts, bolts, and metal shavings is to have a robust preventative maintenance program on all equipment. Machinery vibration can cause nuts and bolts to loosen over time. Wear points on machinery that are not aligned can produce loose metal. Brittle plastics such as seal holders, conveyor guards and plastic bearings can break down into small pieces and become difficult to detect. Proper construction of the equipment that withstands high-volume and high-speed production is equally important as regular maintenance audits to make sure the equipment is in good working order to help eliminate preventable foreign contamination.



FSIS Initiates Food Processor Pest Management Programs

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## Acceptable Level of Environmental Hygiene

Food processing facilities use caustic chemicals for sanitation and pest control. The sanitation environment can have a residual effect on food safety, as well as a corrosive effect on the equipment, that if not maintained, will harm the processing environment.

The selection of the type of stainless steel used in food processing equipment is critical to minimizing corrosion in long-term exposure to aggressive chemicals. For best performance in food processing equipment, type 304/304L and 316/316L are the most used stainless construction materials. The 316 SS material has 2 - 3% molybdenum, whereas 304 SS has none, which gives 316 SS a greater resistance to various forms of deterioration.

Processors should also consider the types of cleaning chemicals and temperatures exposed to equipment surfaces. The ISO and European Hygienic Engineering Design Group as well as NAMI recommend an RA (roughness average) measurement of 32 microinches, equivalent to a No. 4 stainless finish. Surface roughness is generally related to the cleanability of surfaces. That said, a smooth surface (5 -10 microinches RA) on an electropolished surface will clean more effectively and efficiently, limiting the long-term exposure to caustic cleaning practices. The electropolishing treatment also renders the stainless material more durable for continuous washdown.

NAMI recommends that "Hollow areas be Hermetically Sealed". Depending on the food processors' preference and sanitation environment, either open frame equipment can be specified with enclosed threads (especially in food zones), or tube frame designs are specified with non-exposed threads. Exposed threads can add to corrosion. Tube frames with weak or any type of mechanical penetration, or stress cracking can be a source for pathogens and harborage areas for insects and rodents, which can further cause damage to fixtures and buildings. It is important to inspect and maintain non-product surfaces to manage an acceptable level of environmental hygiene.



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### Improved Sanitation Training and Processes

The meat processor needs to confirm that the people in charge of the equipment and the sanitation crew completely understand how every facet of their equipment works, the symptoms when it isn't running properly, and the ramifications of a breakdown - in the sanitation process or in the equipment.

As part of a new system, the processor has an opportunity to include food safety and sanitation experts to be part of the collaboration team and work together to choose equipment and features that will solve for easier and effective sanitation. Consider customization options that will make training and processes easier, such as high-end food contact surfaces, tool-less access components, sanitation steps and decking.

Depending on the processors' needs and sanitation requirements, further customization can include CIP and COP capabilities. CIP solutions with spray balls and controls programming can be included with screw and belt conveyors and mixers. COP components designed for easy access include tool-less seals, guards and swing away pumps and augers. ▶

With customization of the equipment, it is important that the processor's operators, maintenance and sanitation crew fully understand the operation of the equipment and unique features that were modified for ease of cleaning. Consult with the equipment manufacturer for a dedicated training program on proper maintenance and disassembly for sanitation. An equipment training program can be at the onset of a new system or may provide value on an existing system to verify that staff is following protocol and educate if necessary.



Economic Burden of Pathogen is \$15Billion Annually, USDA Says

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### Traceability

Meat processors need to take a holistic approach to manage traceability including supply chain, storage, production and distribution. Equipment and system solutions can assist traceability goals with storage, reporting, and superior cleanability.

As a storage solution, stainless bins with electropolished product surfaces can include SKU codes to manage data for that bin, which is then tracked throughout the life of the product in that bin. 🌐

Controls programs record batch information and recipes according to the requirements of the processor. The system can record ingredient names, weights, product weights, batch run times and product temperature, then the required data is tied to the processor's server that stores and tracks all batch data.

Cross-contamination between batches, pathogen matter and physical contamination are among the top reasons for food recalls. Superior equipment cleanability that goes beyond compliance, will help prevent food recalls that may occur in the process room.

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