



The Food Safety Modernization Act

Sanitary Design Principles and the Role
of Scales in Food Processing

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What Is the Food Safety Modernization Act (FSMA)?

On January 4, 2011, President Obama signed the FDA Food Safety Modernization Act (FSMA) into law. The FSMA brought a much-needed focus of food safety laws into the food processing industry as well as to consumers, and the general public as a whole. The signing of the FSMA was arguably the largest reform to food safety in the previous 70 years. According to the U.S. Food & Drug Administration (FDA), the FSMA “aims to ensure the U.S. food supply is safe by shifting the focus from responding to contamination to preventing it.” The key focus being prevention versus reaction in regards to food safety, from all aspects and stages of food—from the farm to the table.

The FSMA was spurred into action from an increase in foodborne illnesses in the U.S. The Centers for Disease Control and Prevention report almost 1 in 6 Americans fall ill to foodborne diseases each year. Foodborne illness became an issue of public health in the early 2000s, enabling the FDA to set higher preventative standards for food safety and elicit enforcement agencies to hold companies to these standards and contain any potential problems before they become a widespread risk of foodborne illness. To do this, the FDA under the FSMA can order companies to recall when needed.

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The primary role of the FSMA is prevention. As noted by the FDA, “for the first time, FDA will have a legislative mandate to require comprehensive, science-based preventative controls across the food supply.” This legislative power ensures all U.S. companies that contribute to the food supply, no matter their size, are subject to the authority of the FDA and their preventative and responding agency. Under the Prevention section of the FSMA, controls are given to the FDA for the following:

- Mandatory preventive controls for food facilities
- Mandatory produce safety standards
- Authority to prevent intentional contamination

These measures need to be qualified by scientific justifications by the FDA and are enforced by legislation. Under the mandatory preventative controls for food facilities is the addition of a preventative control plan that includes the following:

- 1) Evaluating the hazards that could affect food safety
- 2) Specifying what preventive steps, or controls, will be put in place to significantly minimize or prevent the hazards
- 3) Specifying how the facility will monitor these controls to ensure they are working
- 4) Maintaining routine records of the monitoring
- 5) Specifying what actions the facility will take to correct problems that arise.

Purchasing and using equipment that meets the Sanitary Design Principles (SDP) falls under these mandatory preventative measures as a control to prevent or minimize the possibility of foodborne contamination and disease.



What Are the Sanitary Design Principles (SDP)?

The SDP was developed by the Equipment Design Task Force (EDTF), a group of representatives from meat and poultry processing companies, and was published in 2013. The EDTF's purpose in creating the SDP was to help equipment manufacturers and food processors ensure their equipment designs met specific criteria to reduce the risk of pathogens contaminating food. Although the SDP was created by representatives by businesses already in food processing, the intent is for the SDP to serve the entire industry, creating a standardized system of criteria for equipment to reduce contamination and recalls, benefiting food processors and consumers alike.

There are 10 Principles of Sanitary Design in the SDP, each focusing on a specific expectation for food processing equipment. The 10 Principles of Sanitary Design are as follows:

1. Cleanable to a Microbiological Level

This principle ensures that equipment is designed for deep, microbiological cleaning and has been constructed to meet that level of cleanliness, including “to prevent bacterial ingress, survival, growth and reproduction on both product and non-product contact surfaces.”

2. Made of Compatible Materials

Constructing equipment from materials compatible with the specific processing application, product, environment and cleaning method is customized to each business' needs. Like all of the SDP's principles, the second principle is not a standard but a principle that allows businesses to meet the requirements of SDP in a way that fits their operation best.

3. Accessible for Inspection, Maintenance, Cleaning and Sanitation

In food processing, what you can't see cannot be 100 percent guaranteed to meet FSMA. This principle calls for all parts of all equipment to be accessible for inspection, maintenance, cleaning and sanitation.

4. No Product or Liquid Collection

Excess moisture and collected contaminants, including product residue, can harbor potentially harmful foodborne bacteria and diseases. SDP equipment needs to incorporate self-draining measures to avoid product and liquid collection.



5. Hollow Areas Should Be Hermetically Sealed

Similar to the third principle, non-accessible areas on parts and equipment should be eliminated, or if necessary, permanently sealed with continuous welds. Hermetically sealing hollow areas such as bolts, studs, mounting plates, brackets, junction boxes, nameplates, end caps, sleeves and others helps keep liquids and contaminants from collecting.

6. No Niches

To further ensure equipment doesn't collect liquids or contaminants, niches such as pits, cracks, corruptions, recesses, open seams, gaps, lap seams, protruding ledges, inside threads, bolt rivets and dead ends should be eliminated in the equipment design.

7. Sanitary Operational Performance

This principle ensures that when the equipment is in use, it does not cause unsanitary conditions.

8. Hygienic Design of Maintenance Enclosures

Equipment that includes enclosures and human machine interface (HMI) devices needs to ensure product and liquids do not penetrate or accumulate in and on the enclosure or HMI.

9. Hygienic Compatibility with Other Plant Systems

If equipment requires sub-systems, meeting clean in place (CIP) and sanitary design principles must be evaluated with the equipment and sub-systems acting as a whole, versus as independent sub-systems. This ensures systems meet the hygienic design requirements of SDP principles one through eight.

10. Validated Cleaning and Sanitizing Protocols

Principle 10 requires manufacturers to create and validate a proven cleaning and sanitation protocol compatible for the equipment.

How Does the FSMA and SDP Impact Weighing Equipment?

The weighing industry has largely relied on tried and true weight data technology and equipment design since the digital weighing equipment boom in the 1980s. Although innovative advancements have progressed manufacturers' weighing technology into the 21st century, many manufacturers offer very similar products for food processing weight-related needs.

The relatively new FSMA and SDP have become catalysts in the weighing industry for manufacturers to re-imagine and re-engineer trusted products to meet the requirements laid out in these mandates. With food, there is no room for error. Reputable weighing manufacturers are listening to the demands of food processing companies when they insist on

ratings and the SDP requirements will have their products installed, either to replace non-SDP equipment or as new products in burgeoning applications.

Rice Lake Weighing Systems has developed an offering of weighing equipment to meet the high demands of food processing companies. These products include the MotoWeigh® in-motion checkweigher, CW-90X washdown checkweighing bench scale and RoughDeck® QC-X quick clean extreme floor scale for sanitary applications. The future of food processing weighing equipment must meet FSMA and SDP, and with Rice Lake, that future is expanding with new products and services to meet the needs of food companies from farm to fork.

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SDP equipment. If the FDA under FSMA recalls a company's food product due to foodborne pathogens being accumulated in a scale base, it will cost the food company potentially millions of dollars, a large amount of downtime and associated lost profits, negative publicity, and most critically, the trust of its consumers.

With the SDP, food companies are taking the initiative to require that manufacturers meet a high standard of excellence with their sanitary products. As original equipment manufacturers, the weighing industry needs to respond to this demand. A new wave of weighing equipment that meets and exceeds SDP requirements is being engineered and produced today, and this movement will continue to drive the scale product offering for the food industry in the foreseeable future.

How will food companies know if weighing equipment meets FSMA and SDP? Products that incorporate open designs for CIP procedures, and scales and electronics that meet IP69K, NEMA Type 4X and NSF approval ratings are becoming the standard for SDP products. Manufacturers who meet these



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