

From the Food Safety Committee

Current Good Manufacturing Practices—Processes and Controls

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The MBAA Food Safety Committee publishes regular Food Safety Bites to update members on food safety issues related to the brewing industry. The current focus is on current Good Manufacturing Practices (CGMPs) published in the FDA food and beverage regulations (Code of Federal Regulations [CFR] § 117, Subpart B). When referring to food safety in the brewing industry, CGMPs are oftentimes called Good Brewing Practices (GBPs). After all, beer is food, and it must be treated as such. The Food Safety Modernization Act (FSMA) requires that all food facilities, including breweries and packaging facilities, comply with CGMPs, as described in 21 CFR § 117.10–117.110.

- § 117.10 Personnel
- § 117.20 Plant and grounds
- § 117.35 Sanitary operations
- § 117.37 Sanitary facilities and controls
- § 117.40 Equipment and utensils
- § 117.80 Processes and controls
- § 117.93 Warehousing and distribution
- § 117.95 Holding and distribution of human food by-products for use as animal food
- § 117.110 Defect action levels

The last Food Safety Bite covered equipment and utensils (21 CFR § 117.40). This Food Safety Bite covers processes and controls (21 CFR § 117.80).

The message of this section of the CFR can be summarized as: the safety and quality of beer should not be diminished by the choices made in a brewing facility regarding raw material selection, processing, and storage; production flow; finished product storage; and routine maintenance of equipment and the facility.

General Guidance

Safety and quality of beer are considered at risk if raw materials or the product (at any point in the process) are at risk of microbial contamination, allergen cross-contact, or inclusion of metal or other extraneous materials. Production procedures should regularly be assessed and modified if they increase the risk of contamination or allergen cross-contact. All steps once you begin to process a raw material should be performed under sanitary conditions. As such, the brewery must have a sanitation program, and a person who understands the principles of sanitation (and its importance to the safety of the final product) must be assigned to supervise this program.

A quality control program must be in place can ensure that the product and packaging are safe and suitable. Production areas and the product itself should be tested to identify failures in the sanitation program. If any of the product is found to be contaminated, whether by chemicals, microbes, or extraneous materials, it should either be destroyed or (if possible) reprocessed to eliminate the contamination.

Raw Materials and Ingredients

Raw materials need to be inspected to assure they are clean and suitable for use as an ingredient in beer. They must be stored under conditions that protect from allergen cross-contact and contamination. Any water that is in contact with the product or raw materials during processing must be sanitary. Water can be reused if its reuse does not pose a risk of allergen cross-contact or increased microbial contamination.

Raw materials must either be free of pathogenic microorganisms or be treated or pasteurized during processing to reduce pathogenic microorganisms to a safe level. It is important to note that molds that grow on barley and other grains in the field can produce toxins. There is specific guidance for acceptable levels of aflatoxin in food: the finished product should contain <20 ppb aflatoxin. It is best practice to have a supplier verification program to confirm your malt supplier does not accept incoming grain with mold or toxin levels outside the industry standard.

Storage and use of raw materials, ingredients, and rework must comply with regulations for unavoidable or natural defects. At no point should they be stored in such a way that they become susceptible to pests, microorganisms, or inclusion of extraneous materials. If beer or beer ingredients need to be reworked to be ready for consumption, they must be labeled and isolated so they cannot be mistaken for finished product. Frozen raw materials must be kept frozen, and if they must be thawed before use, the thawing must be done in a controlled manner.

Process and Operations

Surfaces that come into contact with ingredients or finished product, such as equipment, utensils, and containers, must be clean, sanitary, and maintained in a manner that protects against allergen cross-contact and microbial contamination. Finished product should not come into con-

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Ask the Food Safety Team

Ever have a food safety question you don't know the answer to or for which you would like a second opinion? The Food Safety team is there to help! Just post your question in the "Ask the Brewmasters" section of the community site, and the Master Brewers Food Safety Committee will weigh in or get another expert's answer for you!

tact with raw materials, in-process ingredients, or trash, as this can lead to cross-contamination or allergen cross-contact. Keep this in mind when mapping the process within your facility. Raw materials and finished product should be stored separately.

When taking measures to destroy or prevent growth of pathogens or undesirable microorganisms, be sure that the measures are effective. Ex-

ample measures include pasteurizing, cooking, freezing, refrigerating, controlling pH, and controlling water activity.

Packaging materials must be stored and packaging operations must be performed in a way that prevents contamination or allergen cross-contact. Packaging materials are a food contact surface, so they need to be clean and sanitary.