

IOWA STATE UNIVERSITY Extension and Outreach

Importance of cleaning and sanitation

Like most winery operations, the main goal of proper cleaning and sanitation is to promote wine quality, and to keep quality consistently high. Consistent quality, in turn, contributes to the winery's positive reputation and promotes sales. Improper sanitation can lead to unwanted sensory characteristics from spoilage yeast and spoilage bacteria, as well as unwanted fermentations, which may cause fizziness, haze, pushing corks, and even shattered bottles.

Keeping the winery premises clean and sanitary is an overall good business practice. Visitors should be left with a positive impression, rather than entering into to an unattractive or unpleasant-smelling cellar space. More importantly, a clean and tidy work area is safer for staff and can improve the efficiency of the operation.

Cleaning and sanitation protocols help satisfy legal regulations set forth by the Food and Drug Administration (FDA), as wineries are considered food processing facilities. The Preventive Controls for Human Food (PCHF) component of the Food Safety Modernization Act (FSMA) requires wineries comply with standards for Current Good Manufacturing Practices (CGMPs), education and training, and record-keeping. All winery processes should also comply with relevant regulations set by the Alcohol and Tobacco Tax and Trade Bureau (TTB), Environmental Protection Agency (EPA), and Occupational Safety and Health Administration (OSHA).

Definitions and terminology

There are essentially three levels of what is informally called "cleanliness."

- 1. Cleaning involves removing visible dirt, grime, and stains, and eliminates hospitable environments for microbial growth. It often involves the use of detergent, water, and scrubbing.
- 2. Sanitation is done only after a surface is cleaned, and focuses on reducing the number of living microbes. It does not eliminate all microbes, but it lowers their population and prevents uncontrolled growth and spread.

3. Sterilization is a complete elimination of all living microorganisms. For many winemaking tasks, 100% sterilization is not possible. However, we may still talk about sterilization in the context of particularly sensitive tasks or critical points, such as bottling.

Because perfect sterilization is not possible, wineries should use a multi-pronged approach to minimize the risk of wine spoilage. This includes good sanitation, environmental control (temperature, oxygen exposure), wine chemistry (pH, sulfur dioxide), and routine monitoring for early intervention.



Management of sanitation

Sanitation equipment should be food-grade and appropriate for the temperature of the water being used. Sanitation equipment may include bristled brushes, abrasive pads, pressure washers, spray nozzles, barrel washers, ozone generators, and more. This equipment itself can also become soiled or contaminated, so it should be inspected regularly and cleaned or replaced as necessary. All equipment must be allowed to dry and be properly stored after cleaning and sanitation. Appropriate personal protective equipment (PPE) must also be worn to protect from chemical and physical hazards such as caustic cleaners, high pressure, high temperature, high-decibel sounds, or respiratory hazards.

To ensure that cleaning and sanitation is done at appropriate times, it can be associated with a specific task, such as after emptying the press, or it can be scheduled at regular intervals in the case of facility walk-throughs, general tidying, pest control, or others.

A Standard Operating Procedure (SOP) should be written for each cleaning and sanitation task. This will help meet the requirements set by the FDA, as well as clarifying and standardizing the process for all workers. The SOP may be brief, and used as a quick-reference, as long as it includes: 1. When it is to be done.

- 2. The equipment to be used,
- 3. The type and preparation of cleanser or sanitizer.
- 4. The physical action to be used.
- 5. The length of time to spend on each step.

It may be helpful to include a step for inspection or confirmation of effectiveness, if applicable.

A record that the cleaning and sanitation was completed is part of good business practice, so this record-keeping step can also be listed in the SOP to ensure it is completed. Similarly, the next date can be scheduled for any tasks that need to be completed at regular intervals, and this scheduling step may also be listed in the SOP.

Every worker, including seasonal or temporary employees, must be properly trained using the SOP for each task, and the training needs to be recorded.

Factors influencing effectiveness

Cleansers and sanitizers work through three basic modes of action: 1) physical, 2) chemical, or 3) heat. Chemical cleaners typically contain an alkaline active ingredient, sequestering agent(s), and surfactant(s). Common types of chemical sanitizers include halogens, quaternary ammonium salts, peroxides or peracetic acid, and ozone. Best practice includes rotating sanitizers to avoid developing microbial resistance. When selecting cleansers and sanitizers for use in the winery, they should be non-toxic, non-corrosive, and stable during storage. Chlorine bleach should be avoided in the winery because of its potential for haloanisole (TCA, the compound responsible for the "cork taint" fault) production.

The type and amount of soil and the type of surface (material, texture) should also be considered when selecting cleaning and sanitizing products. Be aware of problem spots, such as areas where water may pool up, porous materials, or tight crevices.

The "WATCH" rule can be used to guide sanitation practices. Always follow the manufacturer's instructions for a product regarding concentration, temperature, application method, contact time, rinsing, etc..

W = Water. The quantity and quality of water need to be taken into account, and should be appropriate for the products being used. Water should be de-chlorinated.

A = Action. The physical or mechanical component of the cleaning process can include abrasive cleaners or equipment, chemical foaming action, turbulent flow, high pressure, or the worker's physical effort. Stubborn deposits and biofilms require more physical action.

T = Time. Cleaning products are designed for a specific amount of contact time with a surface.

C = Concentration. Cleaning products will specify the correct concentration to be used.

H = Heat. Products will have optimum temperatures at which they work best. Hotter is not necessarily better in all cases.

References

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