



Top Tips to Make Your COP System Work For You – Part 2

By Richard F. Stier and Mike Cramer

Out of Place But In Control

No matter how advanced and automated the CIP system is, there is always a need to clean the parts of production equipment not exposed to the cleaning process. There are pieces of equipment that simply cannot be cleaned where they are used, including piping, fittings, gaskets, valves or valve parts, filler parts and surfaces such as guides or shields, tank vents, tray pack, grinders, pumps, and product handling utensils such as knives. To properly clean and sanitize these units or parts, COP is employed to clean tear-down parts of processing and packaging equipment that require disassembly for proper cleaning (Figure 4). Because COP is essentially the systematic manual cleaning and sanitizing of production equipment that must be disassembled in many cases, specific attention must be paid to cleaning underneath and around gaskets, O-rings, small pipes and other small surface cavities, gaps or other niches and harborage points in which potentially harmful residue and bacteria may accumulate.

Cleaning knives or spoons that are used in a plant's dishwasher would be considered a COP operation. In food plants, a common use of the COP cleaning method involves pieces of equipment that are small, complex and otherwise hard to clean. They are disassembled, rinsed and then cleaned and sanitized. COP may occur in a sink with a worker scrubbing to clean, or in tanks specially designed for COP (Figure 5). In these tanks, detergent and agitation are used to clean the equipment in question. Sanitizing may be done using hot water or chemical sanitizers. Small items, such as valves, sanitary fittings and such, can be placed in cages and cleaned with larger items. Options include doing a rinse, hot water wash with detergent, rinse and soak in sanitizer. Operators can also sanitize COP items by raising the second rinse temperature and holding for 15 minutes at >180F.

The basic steps in a COP operation include:

- Dry cleaning to remove dust, soil and other debris from the equipment to be cleaned and the area in which COP tasks will take place.
- A pre-rinse of the equipment and area on racks or in COP tanks.
- Soap and scrub the equipment and equipment components in COP tanks or vessels.
- Post-rinse parts to remove residual detergent or cleaning chemicals.
- Conduct pre-operational procedures and sanitize any equipment components that are not accessible once reassembled. Reassemble the equipment.
- Sanitize the reassembled equipment with a sanitizing agent or heat treatment.

Although the following tips for effective COP may seem obvious, they are well worth review:

Greensboro Division / Corporate Headquarters
301 Citation Court
Greensboro, NC 27409
Phone: 336.393.0100 / 800.334.0231
Fax: 336.393.0140

Louisville Division
4400 Bishop Lane, Suite 112
Louisville, KY 40218
Phone: 502.459.7475 / 800.459.7475
Fax: 502.459.7633

Nashville Division
334 Free Hill Road, Suite B
Hendersonville, TN 37075
Phone: 615.822.3030 / 855.749.4820
Fax: 615.822.3031

Tip 1. Conduct COP tasks in order. It is important to understand that sanitation is a sequence of steps that build from the successful completion of the previous steps. In particular, COP practices, which involve multiple individuals working in the same area, multiple small parts to be cleaned and multiple sanitation steps for each item to be cleaned, are ineffective when steps are not taken in sequence. For example, it is not difficult to understand that the level of cross-contamination risk is raised if personnel are not all working at the same step at the same time. If one individual in that area is doing a final rinse while another person is doing a pre-rinse and the equipment is adjacent to each other, there is a risk of overspray from the unsanitized surface to the sanitary one.

Tip 2. Consider using basket or tote washers. Another COP system that is of great value is comprised of basket or totes washers. Companies, such as those in the fresh-cut industry, who use a large number of small containers in their process operations, should look at these units. The container is simply loaded onto the system and it passes through the unit where it is rinsed, washed and rinsed. The cleaned containers should then be stacked so that they will not become re-contaminated. These washers may also be used for steel trays, pots or totes used in meat operations. A washer like this is usually much more effective than having an employee individually clean each and every tote, basket or pot.

Tote washers, in particular, are usually designed to filter debris and reuse water, which can translate into reductions of water and chemical usage.

Tip 3. Use a tank rather than a rack. Parts removed for cleaning are either placed on a rack for cleaning or placed in a COP circulation tank and cleaned using a heated chemical solution and agitation. There are advantages to using a tank versus a rack, including:

- Parts may be cleaned all at once rather than individually which can be a time saver.
- The ideal vat or tank is stainless steel and sufficient size to fully submerge all parts, and will have smooth welds and no dead spots so that it will not be a source of contamination itself
- After dry cleaning major soil off the parts, they are placed in the tank and water is added to the tank that is either hot (125-130F) or will have steam injected to achieve that temperature.
- Once the cleaning chemical is added, turbulence will be created, either from steam or mechanical means to aid in loosening soil.

When parts are clean, rinse thoroughly with clear potable water, inspect and sanitize. Parts may either be reassembled or stored on a rack until ready for use. One caution: Many COP operations are carried out by staff on production floors. They will literally work on the floor or on temporary tables. While the equipment and components may get clean, control is questionable.

Tip 4. Make sure the mechanical action tools used in COP tasks do not contribute to potential contamination. Since COP requires manual washing, or scrubbing, by staff for adequate soil removal and cleaning, the tools used take on critical significance. Make sure that cleaning brushes are rugged, made of non-absorbent material with bristles that are resistant to retaining soils and that dry quickly. Hand brushes and floor brushes should be color-coded to ensure that those designated for use on food contact surfaces are not used on non-food contact surfaces. The same goes for buckets, pails, utensils and other cleaning tools that are portable. These tools should undergo specific cleaning and sanitizing, as well, either with chemicals in a dedicated wash-and-rinse sink unit or via heat treatment.

Work with the Experts

In general, the key to success in any endeavor can be summed up as follows: The easier it is to do something, the more likely it will be done and done right. With regard to increasing the effectiveness of the food plant's CIP and COP systems, the processor that understands the products being processed, the water chemistry involved, and the operating parameters will enhance the plant's ability to simplify the cleaning and sanitizing process. Communicating this knowledge to and working with CIP and COP equipment suppliers and chemical solutions and treatment suppliers to set up systems and procedures that mesh with these considerations will help ensure that your regimen is easy to perform, monitor and verify that this aspect of the process is in control.

Richard F. Stier is a consulting food scientist with international experience in food safety (HACCP), food plant sanitation, quality systems, process optimization, GMP compliance and food microbiology. He can be reached at rstier4@aol.com.

Michael M. Cramer is Director, Quality Assurance with Windsor Foods Co., headquartered in Houston.