

Smart sanitation strategies

With the food industry taking a more professional approach to sanitation, sophisticated tools for executing SSOPs are being used.

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A collaborative approach between in-house sanitation and contract pest-control specialists is beneficial for many food processors. Source: Orkin Commercial. Twenty years ago, “necessary nuisance” would fairly describe the prevailing view of plant sanitation. Time spent cleaning was time away from production, and being named sanitation supervisor was not a fast-track appointment. Biofilms in equipment crevices were a nonissue, and pest buffets in drains and dark corners were a concern only if someone raised a fuss.

A number of factors—stricter health regulations, customer requirements, environmental concerns, painful recalls—have coalesced to alter that viewpoint. Certain events galvanized companies to drastically alter their practices. An axis of experts has formed to professionalize the sanitation effort and introduce a collaborative approach to leverage new technical tools.

While some organizations may still equate sanitarians with janitors, leading manufacturers view them as productivity partners. Instead of an expense, sanitation is an investment opportunity with significant potential returns. A handful of meat processors have extended operations to 24, 36, even 72 hours between shutdowns by sanitizing work zones intermittently and verifying the microbial remediation to USDA. Among them is Beef Products Inc., which cross-trains night-shift operators as sanitarians to realize extended runs. The payback can be enormous: for every minute a day added to production at one meat plant, Kraft realized \$10,000 worth of additional throughput a year, Sanitation Director Joseph M. Stout told attendees during the Food Safety Summit last March. The key, he explained, was the formation of a collaborative effort between production, maintenance and quality assurance, rather than viewing sanitation in isolation.

If sanitation crews are going to work smarter, collaboration has to extend beyond the in-house staff. Chemical suppliers such as Ecolab, JohnsonDiversey and Zep Manufacturing have become partners in selecting the most appropriate sanitizers. Three quarters of North American food plants outsource the pest control aspect of sanitation, making collaboration with companies like Orkin,

Terminix and Steritech critical for tactical decisions. And labor shortages are forcing more processors to outsource sanitation duties entirely, making service providers such as PSSI in meat plants and Aramark in bakeries important information sources for the newest and most effective technologies.

Poor employee hygiene is a chronic sanitary concern. If there was a way to monitor and measure compliance with handwashing requirements, for example, the hand sink could be regarded as a critical control point. Technologists at eMerge Interactive have re-engineered black-light technology for detecting fecal contamination on beef carcasses into a hygiene system for scanning the human hand. ("Putting contaminants in a new light," Food Engineering, July/Aug. 2002.) Excel uses the carcass scanners at three packinghouses, and its managers asked eMerge to adapt the technology, according to David Foth, marketing director-VerifEYE technology. The Sebastian, FL, company will rely on chemical companies and other sanitation specialists to bring it to market.

Hand scanners that can detect trace amounts of fecal contamination can be outfitted with NEMA 4X enclosures for food-plant applications. Source: eMerge Interactive Inc.

Scanners will be placed at handwashing stations, and workers will place their hands under them after washing and before returning to work. The unit's processor looks for four signature wavelengths consistently associated with feces and flags any trace amounts with a red light, signaling the user to wash again. "Once you show someone something they couldn't see before, you begin to change behavior," says Foth, who cites Centers for Disease Control estimates of 30% to 50% compliance with employee handwashing requirements in food-handling establishments. Plant trials were planned in the spring to gauge worker acceptance and the machine's ability to withstand the industrial environment.

Enforcing personal hygiene

Integrating HandScan with a worker identification system will help document results and yield compliance statistics, but it also has human-psychology implications. The same is true of video monitoring systems. "You can't play the fear game and use technology to beat up employees," cautions Adam B. Aronson, CEO of Arrowsight Inc., developer of ADT Select Vision. His firm is working with ADT Security to install cameras to monitor compliance with handwashing rules and verify pre-op sanitation regimens and other procedures. "People love being measured, and people who make \$10 an hour don't get a lot of evaluation," Aronson says. If cameras are used as an instrument for rewarding the right behavior instead of a cudgel for punishing mistakes, video monitoring can be an effective tool, he maintains.

Plumrose USA is Arrowsight's first food client. In January, 25 cameras began monitoring the West side of Plumrose's Council Bluffs, IA, facility, where deli logs, bacon and pickles are produced. Ten weeks into the program, "we're not 100 percent satisfied, although we are rapidly approaching that point," General Manager Mike Rozzano reports. "Are employees sanitizing their hands when

exiting the bathroom? Are they filling out HACCP compliance forms each time they make a batch of pickles? Our goal is nothing short of total compliance.”

Cameras have been deployed at meat plants before, “but after the first few weeks the novelty wears off and nobody looks at the tapes,” Rozzano says. Two new wrinkles set Select Vision apart: video snippets are created on a spot-check basis or when a button must be pushed to signal a required action, and auditors report the results in weekly conference calls with plant supervisors. “It’s like having a seven-day-a-week third-party audit going on in your plant,” he says.

Targeted pest-control applications are replacing plant-wide fumigation in food facilities Source: Steritech Group Inc.

The ability to document sanitation practices and HACCP compliance is important, but “yield improvements end up paying for this by many multiples,” Aronson emphasizes. To reduce product giveaway, for example, Plumrose operators are required to periodically weigh logs and adjust equipment as necessary. The button that activates cameras to verify the scale results was pushed 92 percent of the time 10 weeks into the program; absent the camera, weight checks might be performed half the time, with operators filling in forged numbers for the rest at the end of the shift.

When it comes to actually cleaning contact surfaces and equipment, sanitation crews sometimes have inadequate time and resources to execute their responsibilities. People like Kraft’s Stout have championed sanitary design of equipment for years, and some progress has been made—but not much. “Sanitary design of equipment is pathetic,” believes Dean Stanbridge, technical director of the Steritech Group Inc.’s pest prevention operations in Toronto, Canada. “Even the brand new stuff is designed without the assistance of an entomologist.” Crevices that harbor microbes also harbor insects, and those sanctuaries exist when hand guards are difficult to remove and open-ended steel tubes are part of the design.

Cleaning flawed equipment takes more time, but outsourcing to contract cleaners in the raw meat and poultry segments sometimes means those workers will have less time, suggests Phil Ellis, senior chemist with Zep Manufacturing, Atlanta, GA. “Food sanitation is not looked at with the respect it should be,” Ellis complains, “and contract cleaners are under cost pressures that cause them to migrate to raw caustics and bleach-based solvents that eventually can destroy the equipment and pose health risks to workers. People are suffering burns and other injuries.”

Because of Listeria concerns, ready-to-eat meat processors are keeping sanitation in house, he adds. “There’s a big commitment from management to give sanitation crews the time and resources to get the job done.” And integration of sanitation with operations so that cleaning occurs continuously is being evaluated by leading processors and USDA. “It’s critical to have in-house sanitation in that case,” says Ellis. “Instead of looking at sanitation as a necessary evil, those processors are looking at it strategically.”

Pinpoint pest control

Wall-mounted heat exchangers that convert steam to dry heat are a permanent replacement for fumigation. Source: Armstrong International.

Insect and rodent control is more fundamental than equipment sanitation, though specialists in this area have achieved higher status than their counterparts on the cleaning crew. "Pest control is a prerequisite of HACCP, and HACCP is resulting in more thorough, better programs for food safety in dairies," says Peggy Gnoza, quality assurance supervisor at Aurora Organic Dairy, Boulder, CO. Gnoza helped implement one of the first dairy HACCP programs at a Seattle plant in 1999.

Outsourcing sanitation is unheard of in the dairy segment. On the other hand, outsourced pest control is the rule. The fewer chemicals stored on site, the better, she reasons, and insecticides should leave with the pest-control crew. But in-house sanitation must work closely with those service firms, and Gnoza's coordinated approach to integrated pest management resulted in a Gold Medal IPM Partner Award from Orkin Commercial Services last year.

"In pest control, we talk about sanitation, sanitation, sanitation," says Zia Siddiqi, an entomologist and QA director at Atlanta-based Orkin. Whether combating rodents and flies in a cheese plant or Indianmeal moths and flour beetles in a bakery, pest control specialists are scrapping the sledgehammer approach of fogging and fumigation in favor of "monitoring and information capture" to determine the source of the problem, Siddiqi adds. The information is then relayed quickly and efficiently to people such as Gnoza so that sanitation workers can take corrective action.

Bans on fumigants such as methyl bromide have forced plant operators to take a more holistic approach to insect control. Nuts attract egg-laying moths, and Hershey Foods recently converted to heat sealed film for Almond Joy in part to keep out larvae. A more thoughtful breed of urban and industrial entomologists began graduating from Purdue University in the 1950s, and they have helped commercialize products such as Moth Suppression, a pheromone discovered by Oklahoma State University scientists that attracts pregnant Indianmeal moths, the foremost problem in stored food and grain. "We're becoming snipers instead of dropping atomic bombs," says David Mueller, a Purdue alumnus and founder of Insects Limited Inc., which brought Moth Suppression to market last year.

A worldwide community of 300 entomologists serves the food industry, Mueller estimates, and the watershed event that led to their involvement was an early 1990s pesticide fiasco at General Mills. Use of an insecticide with an unapproved solvent resulted in heavy fines and a massive recall of Cheerios. In the fallout, chemical companies started developing nontoxic products such as Spinosad, a mixture of naturally occurring metabolites found in the Caribbean that are toxic for pests but do not affect humans. Developed by Dow AgriScience, Spinosad recently received EPA approval for crop applications and

is awaiting a green light from Japan and South Korea before widespread use begins.

An even more benign alternative is heat. Pillsbury, Nabisco and others have designed plants for heat sterilization for decades, “but the future is spot treatment,” believes Steritech’s Stanbridge, “because there are only a few key areas that need to be treated. I’ve heat treated a bakery flour system while the rest of the plant continues to run on bagged flour.”

Stanbridge has developed a protocol and heat-treating system that can be transported by maxi-van to any plant in North America. Other pest control companies are more likely to contract with firms like Armstrong International to treat a facility. “You can kill mold with heat, and it won’t come back,” maintains Brian Kimbrough, manager of Armstrong’s heat treatment group.

For plants with steam systems, a permanent set up that includes a heat exchanger to pull latent heat from a steam pipe and RF thermometers to monitor temperatures can be installed. The equipment isn’t cheap, but treatment costs are a fraction of fumigation chemicals. “Housekeeping is a really big part of the equation,” Kimbrough adds. “Now that bakeries and other processors have had to look at solutions other than four fumigations a year, they’re keeping the plants cleaner, and they may do one heat treatment a year.”

Whether they are practicing integrated pest management, deploying technology-driven personal hygiene systems, or demanding sanitary equipment design, food and beverage processors realize cleaning crews are not janitors, and product and service providers have more to offer than bottles of chemicals and elbow grease. There is not only a requirement for smarter sanitation: there is an economic payback. Plant managers who get it can help ensure their organizations’ continued success.

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