



CASE STUDY

WHEN CLEANLINESS SAVES LIVES: THE VITAL LINK BETWEEN SANITATION AND PEST CONTROL

The listeria breakout this summer at a Boar's Head processing facility in Virginia led to multiple deaths, dozens of hospitalizations across 18 states and launched a slew of litigation against the company. It also led to the closure of the plant and the loss of more than 200 jobs.

The cause of the outbreak was linked to previously documented issues with mold and mildew from excessive moisture, as well as the presence of insects in the facility. How persistent were the issues? U.S. Department of Agriculture inspectors had flagged 69 records of noncompliance in the last year.

Among the plant's records were multiple sightings of insects in and around deli meats at the plant, including one instance that prompted the agency to tag almost 1,000 pounds of ham in a smokehouse hallway to be "retained" for investigation.

Another record flagged concerns that flies were going in and out of "vats of pickles" left by Boar's Head employees in a room and small flying gnat-like insects being observed crawling on the walls and flying around the room. The room's walls had heavy meat buildup, according to the report.

Other parts of the facility were also found to have bugs, including what looked to be "ants traveling down the wall," as well as beetles and cockroaches.

Pest control professionals understand the direct linkage between sanitation and pest control. If you don't have the former, you won't achieve the latter.

CHALLENGES

The effective prevention and management of pests is one of the good manufacturing practices (GMPs) food processors must follow to store, produce and transport safe food. It, along with sanitation, cleaning, inspection practices, temperature controls, storage practices, audits, etc., complete the food safety matrix.

"Each part of the matrix is dependent upon the other," said Darren Van Steenwyk, Director of Regulatory and Compliance for Sprague. "Pest management professionals need to do their part but so do facility employees."

What is the linkage between sanitation and pests? To answer the question, you first need to identify the conducive conditions that lead to both poor sanitation conditions and in turn attract pests.

Van Steenwyk said the first condition that comes to mind regarding sanitation in food processing facilities is the buildup of food waste and water. The buildup is a desirable food source for a variety of pests including flies such as the large house flies (*Musca domestica*), fruit flies



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(*Drosophila melanogaster*), phorid flies (family Phoridae), drain flies (*Psychoda grisescens*), German cockroaches (*Blattella germanica*), stored product pests and rodents.

There are two places where buildup occurs in food processing facilities:

- In areas or equipment that are designed to move ingredients or products, water or waste (i.e., pipes, drains, disposals, etc.) within a facility.
- Areas or equipment that are not designed to not have product movement including underneath, behind or on top of equipment, beams and ledges or behind parts in processing equipment (i.e., cutters, sifters, etc.).

Removing buildup in areas or equipment designed to move ingredients or produce things can be accomplished through basic physical cleaning since these areas are often more accessible than areas not designed to move product, and they don't have to be shut down or disassembled.

"Lids or drain covers are easier to remove to perform a cleaning vs. trying to get behind or under a large processing machine or oven," said Van Steenwyk. "Cleaning inside a piece of equipment also requires shutting down and disassembling the equipment which means it's not making money."

Food processing facilities are classified as dry or wet, or a combo, depending on what products are produced. Both types of facilities are vulnerable to build up and the resulting pest issues, but Van Steenwyk said dry processing facilities can be more problematic when it comes to pests.

Dust buildup from grains (i.e., barley, wheat, etc.), flour, powdered milk, spices and dried fruit can attract a variety of stored product pests including confused flour beetles (*Tribolium confusum*), Indian meal moths (*Plodia interpunctella*), and various species of beetles. Van Steenwyk said the threat of product spoilage is greater with stored product pests since they produce high volumes of insect waste.

In wet processing facilities where there is buildup of organic matter and excess moisture, flies and cockroaches are the primary threat.

"Flies live in their food whereas all other insects live next to their food source," said Van Steenwyk. "That is why flies are so attracted to organic build up and why sanitation is a critical component to ensuring good food safety practices."

Sprague route managers encountered a situation in an older food dehydration facility, where processing equipment continually discharged water and staff was hosing down the production floor frequently.

The grout between floor tiles had weakened over time due to the high volume of water present and allowed water and organic materials to seep through and create conditions conducive to attracting flies.

Explaining Pathogens and Food Borne Illnesses

Pests threaten food processing facilities by transferring harmful pathogens to the surfaces of processing equipment, food preparation surfaces, directly to unfinished, finished food or raw materials. Pathogens are the disease agent of common foodborne illnesses including *E. coli* and *Salmonella*.

Pests are a vehicle to move pathogens around a food processing facility when they crawl or land on food processing equipment, preparation surfaces, raw materials/ingredients and finished products. The highest risk of transfer comes with raw materials/ingredients and semi-processed food where pathogens can establish their presence early.



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Director of Regulatory & Compliance

Sprague Pest Solutions



Pests threaten food processing facilities by transferring harmful pathogens to the surfaces of processing equipment and food preparation sites.



"Pests present the strongest threat during the manufacturing process and when raw materials/ingredients are in long-term storage," said Van Steenwyk. "When pest activity is observed in these areas it should raise an immediate red flag to the facility and its pest management professional to investigate further."

Cockroaches are a prime example of pests transferring pathogens that can lead to food-borne illnesses. Cockroaches constantly clean themselves and whatever they groom off their body they ingest. If roaches clean themselves in a sewer pipe or pile of garbage they will ingest the harmful microbes present and then defecate on food, ingredients or food preparation surfaces or machinery.

SOLUTIONS

How do food processors achieve a level of sanitation that will mitigate conditions that can attract pests? It starts with knowing the differences between cleaning, disinfecting and sanitizing, and identifying what is needed for their facility.

"Management and their in-house or contracted cleaning crews need to understand what each process does, and how the products used protect against pests," said Van Steenwyk. "They must also ensure that cleaning, sanitizing and disinfecting products are used properly to meet requirements and objectives."

As part of Sprague's holistic approach to pest management, Van Steenwyk said the company advises clients on not only sanitation best practices, but how to identify conducive conditions that contribute to poor sanitation.

Sprague route managers will keep an eye out for the following:

- Proactively identify potential 'hot spots' in facilities where the buildup of food waste, moisture and other organic matter is or is likely to happen due to poor drainage, maintenance, or structural issues.
- Explain the conditions and behaviors that can lead to poor sanitation and how to adjust cleaning and sanitation protocols and employee training programs to address the issue.
- Document the corrective actions needed and follow up to ensure they are made in a timely manner.

Cleaning

Cleaning is the process of removing dirt, dust, debris, and impurities from surfaces or objects using soaps or detergents, sweeping or vacuuming. While this will remove visible organic build up and reduce some of the contaminants or pathogens, it does not eliminate them.

Sanitizing

Sanitizing with wipes or sprays is designed to reduce the microbial load on surfaces to a level that is considered safe by health standards. It does not, however, necessarily kill all pathogens present and can leave food preparation processes at risk.

Disinfecting

Disinfecting kills a wide range of germs and pathogens, such as bacteria, viruses, and fungi on surfaces. This can include using bleach solutions or EPA-approved disinfectants on critical, high-touch surfaces in food processing facilities. Disinfectants will eliminate nearly all harmful pathogens but might not clean off visible dirt.

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If a client requires food preparation surfaces or equipment to be pathogen free, they need to use disinfectants labeled for this usage and have them applied correctly. This was a mistake companies made during the Covid pandemic when in the rush to keep operations open, they used sanitizers that did not disinfect surfaces and vice versa.

“The product must control the targeted pathogens fully to be completely effective,” added Van Steenwyk. “It is critical to know exactly what results the product is capable of delivering.”

RESULTS

Sanitation is fundamental to the operational success and safety of food processing plants, as it directly impacts product quality, shelf life, and successfully passing internal and third-party audits. Effective sanitation practices reduces a facility's attractiveness to pests, preventing the transfer of harmful pathogens that lead to foodborne illnesses, reducing the risk of product contamination and spoilage, and protecting consumers.

Maintaining strict sanitation standards is also good business. It reduces the risk of costly recalls, closure of production lines to remediate issues, and protects a company's brand reputation by ensuring safe, high-quality products. Making sanitation a priority in food processing facilities is not just a regulatory obligation but an essential commitment to public health, operational efficiency, and brand integrity.