

Build a fortress to prevent pathogen invasions in your facilities

According to the US Centers of Disease Control and Prevention, more than 48 million Americans are stricken with food borne illness every year.¹ Many people remember the 1982 Tylenol incident² which caused changes in consumer packaging, and the 2009/2010 Tylenol recalls^{3 4} due to the chemicals traced back to treated wood pallets.

The next big event in food protection occurred in 2011, with the Food and Drug Administration's (FDA's) Food Safety Modernization Act (FSMA) legislation. Still, in 2011 there were four large E. coli outbreaks; 2012 saw recalls in six states due to a Listeria outbreak; and, in 2013 the FDA has issued an average of 11 recall notifications per week.

In the rush to reduce the risk of pathogen contamination in U.S. consumable food and pet food manufacturing facilities to meet the FDA's FSMA legislation, companies have convinced themselves that they are prepared to respond and prevent the risk of contamination.

However as positively as those improvement efforts are regarded, they often don't account for obvious gaps: just as a glass of water that is half full is, at the same time, half empty.

Because of that reality, it would perhaps be wise to consider the advice of Wharton professor and author Adam Grant in his article, "The Positive Power of Negative Thinking" when evaluating how successfully contamination prevention has been implemented in a facility. In his article, Grant observes that, "many of us are successful when we focus on the reasons that we're likely to fail."⁵

Therefore, when evaluating your facility's efforts to prevent pathogen invasions, consider the following questions:

- Are your plants and facilities built with impermeable walls around their processing rooms and processing areas?
- Will your efforts completely eliminate the risk of common microbial pathogens—such as *Listeria monocytogenes*, *Escherichia coli* (*E. coli*), *Campylobacter jejuni*, *Salmonella* and *Shigella*—contaminating your products?

Although many operations managers would answer, "yes, my processing areas will not allow any incoming pathogens," their facility's design, types of equipment, pallet selections, and logistic practices say, "no."

¹ <http://www.cdc.gov/features/dsfoodborneestimates/> (Accessed, May 6, 2013)

² http://en.wikipedia.org/wiki/Chicago_Tylenol_murders (Accessed, May 6, 2013)

³ <http://online.wsj.com/.../SB1000142405297020479240457722907211450013>. J&J recalls infant Tylenol. Jonathan Rockoff WSJ February 2012

⁴ www.palletenterprices.com/atcledatabase/view.asp?articleID=4045 DeAnna Stephens Baker, Pallet Enterprise Magazine, "Proposed Food Safety Rules concerning Pallet Industry", November 1 2013

⁵ Adam Grant, Professor at the Wharton School, article 2013 "The Positive Power of Negative Thinking"

https://www.linkedin.com/today/post/article/20131015140307-69244073-the-positive-power-of-negative-thinking?_mSplash=1

Every processing room and area must be viewed as a castle, or fortress, with reinforced walls or barriers. Inside your castle, keep all material handling items—pallets, forklifts, bins and more—secure inside the fortress walls. All incoming material handling items—ingredients transported on supplier-provided skids or pallets—should be kept out of the castle.

To ensure that only safe, uncontaminated goods flow out of your fortress, all inbound items should pass through an additional handling step. Remove items from potentially contaminated external shipping pallets, and transfer them to your facility’s tightly-controlled captive plastic pallets, bins or totes prior to entering the processing rooms/areas.

Because that additional handling step is skidded, many facilities expose their practices, equipment and products to potential contamination. They allow incoming ingredients, work-in-process and secondary packaging to be delivered directly into the clean room. No attention is paid to the wood pallets or external pooled pallets, what items may have been transported on them last, or the environment in which they travelled to the facility.

As an example, an international manufacturer of gravies and sauces has implemented a process to test all incoming ingredient shipments, their secondary packaging and their mode of transport. The testing determines if the incoming product has been exposed to restricted pathogens. Operations personnel recently discovered that incoming shipments of product, traveling on a 9-block pooled pallet, were shipped on a truck trailer floor damp with liquid from a previous delivery. After testing the liquid on both the trailer floor and the incoming pallets that came into contact with it, restricted pathogens were discovered. Had the inbound pallets—now contaminated with pathogens—been permitted into the plant, the potential for cross contamination to the food products made there would have been extremely high.⁶

In another example, an international restaurant franchise makes its dough in scrupulously clean plant processing rooms. However, the pallets used in the processing rooms are also used to ship dough from the processing room onto delivery trucks to be delivered to its outlets. To maintain product integrity, the pallets are used on their delivery truck and are subsequently returned to the processing room for reuse. However, during routine testing of their process for potential contamination, pathogens were discovered on the pallets and on the driver’s shoes. After investigation, the pathogens on the driver’s shoes were present when he arrived at work and the contaminants were spread throughout the processing room, on the captive pallets, and in the delivery truck after a day of delivering finish goods on his route.⁷

Therefore, consider your operations with a “glass is half-empty” perspective. What holes in your castle’s defenses are allowing pathogens into your warehouse, your storage areas or your processing rooms?

So how can you turn your human food and pet food plant into a castle to reduce the risk of cross contamination?

⁶ Site visit May 21, 2013, a Polymer Solutions Customer, Chicago, Illinois

⁷ Site visit November 18, 2013, a Polymer Solutions Customer, Phoenix, Arizona

Think of your facility as a fortress with a series of defenses. Your first goal is to separate your processing areas from the rest of the facility. Don't let inbound items pass freely through your external walls. Instead, treat your receiving dock like a moat that separates supplied items from the interior spaces until they've been transferred onto a facility-secured captive pallet, bin or tote. Here are a few suggestions:

- Restrict all material handling equipment (such as forklifts, pallets, bins, totes and more) from entering a processing room or leaving a processing area. Ingredients or work-in-process entering the processing area must only travel on facility captive pallets, bins or totes. Transfer loads with pallet inverters, pallet transfer stations, flow through racks or conveyors to build a wall around your processing area and storage areas.
- Restrict all external pallets, bins and totes from entering the facility by using of pallet inverters or pallet transfer stations to remove their loads and transfer them onto captive plastic pallets. If a single external pallet is allowed into the facility, it could end up in sensitive areas.
- Use only captive plastic pallets within your facilities. "The rule of thumb is that anything moving into the production area is moved on a plastic pallet. A plastic pallet can be cleaned and sanitized and it eliminates the potential contamination from wood in production areas," says Richard Stier in *Food Engineering* magazine.¹⁴ Plastic pallets can be manufactured with anti-microbial additives, radiopaque additives for x-ray detection or metal detection additives incorporated during manufacturing. These additives help to restrict pathogens and to detect any pieces of the pallet that might inadvertently contaminate the final product.
- Color-code your plastic pallets, bins and totes for easy visual identification at a distance, and also to clearly segregate them for use in specific areas. For example, use blue for your processing areas, green for work-in-process storage areas, and black for finished goods storage within your facility.

Note also that the FDA is working to clarify the requirements, currently holding FSMA hearings related to whether a pallet should be "cleaned" or "sanitized." The current act defines clean as "no debris, soil, blood or oil." Sanitized is defined as a treatment method that "uses heat or chemicals to effectively reduce 99.9% of pathogens."

In addition to determining whether a pallet needs to be cleaned or sanitized, the FDA is revisiting mandated microbiological testing of a facility and its material handling equipment to verify that a plant's food safety program works. Previously considered in November 2011, the requirement was rejected at the time. However, as of January 2013, this proposed rule is again under consideration.^{8 9 10}

Whatever the FDA ultimately decides, as Grant stated, "If you're a defensive pessimist, when preparing for a performance that really matters, you might want to list your weaknesses instead of your strengths,

⁸ <http://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm319053.htm> 2012 FDA Science Writers Symposium

⁹ http://www.huffingtonpost.com/2013/03/26/food-safety-modernization-act_n_2948581.html "Food Safety Modernization Act Testing Requirements Axed in White House Review," Huffington Post, March 26, 2013

¹⁰ Dr. Harry Lawless, Professor Emeritus of the Food Science of Cornell University, WEBEX, "The Top 10 mistakes in Sensory Evaluation and Consumer Research" August 21 2013 at 2:00pm (EDT)

and drink a glass of anxiety rather than a shot of confidence.”¹¹ Bear that in mind when evaluating at your food and pet food facilities and operations. What you don’t see will harm your customers and your business.^{12 13}

As Margaret A. Hamburg, MD, a FDA commissioner, stated: “We cannot afford to wait until people become ill to realize there is a problem.”¹⁴

For more information about how you can better align your handling practices with FSMA legislation, please call Polymer Solutions International at (877) 444-7225 or visit the website at www.prostackpallets.com.

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About Polymer Solutions International, Inc.

Founded in 1997, Polymer Solutions International is a global manufacturer of a wide variety of plastic pallets and FM-approved fire retardant plastic pallets, including nestable, stackable, rackable pallets, and custom pallets. Made from 100% recyclable, FDA-approved materials, the company’s products are ideal for pharmaceutical, general industry, food, beverage and warehousing applications. For more information, visit www.prostackpallets.com.

¹¹ Adam Grant, Professor at the Wharton School, article 2013 “The Power of Negative Thinking” https://www.linkedin.com/today/post/article/20131015140307-69244073-the-positive-power-of-negative-thinking?_mSplash=1

¹² Richard Stier, Food Engineering Magazine, “Food Safety: Ode to the pallet”, October 1 2011

¹³ Gurjit Degun, CIPS Magazine, “The five major issues facing supply chain leaders”, October 1 2013

¹⁴ Commissioner’s Statement on the Food Safety Modernization Act Margaret A. Hamburg, M.D., Commissioner of Food and Drugs December 21, 2010