

### Don't drop the ball

Keep a firm grip and prevent product contamination by using metal detection, X-ray inspection.

By Carolyn Chapin

When anyone drops something, it's frustrating. Depending on the object, consequences can range from a bruised foot, to broken glass, to the inconvenience of being forced to bend down and pick the object up.

For a plant worker, dropped objects have more resounding consequences. Something dropped could jam expensive machinery — or possibly worse — end up in a consumer's finished entrée, appetizer or snack.

Fortunately, there are several steps plant operators can take to avoid and

remove foreign material contaminants.

"The major step companies can take to reduce contamination in the first place is to practice Good Manufacturing Processes," notes Oscar Jeter, national sales manager of Mettler-Toledo Safeline in Tampa, Fla. "This includes mandating that all employees monitor themselves to be free of potential hazards such as pens, pencils, rings and other items that might be on their person."

Of course, dropped objects aren't the only potential contaminant in refrigerated and frozen food processing plants.

"The No. 1 contaminant in manu-

facturing facilities is metal from internal sources, mixing equipment, pipes, etc.," says Bob Ries, product manager for Thermo-Fisher Scientific in Waltham, Mass.

Ries adds that other contaminants — including rocks, sticks and leaves — may originate on a the farm where a raw material was harvested. Still more possibilities include glass and plastic from in-plant fixtures.

With many possible sources of contamination, it is essential that plant managers monitor production in several ways and at several points throughout the process. This is the premise behind the Hazard Analysis Critical Control



X-ray inspection easily detects contaminants during processing.

Photo courtesy of Mettler-Toledo Safeline

Point (HACCP) system, which aims to prevent contamination in the first place, rather than remove it later in the production process. This is accomplished by including critical control points at several points throughout production.

“There is no one inspection device that is the answer to all problems. Each application will determine the best inspection technology to use,” notes Gary Wilson, president of Loma Systems Inc., Hampshire, U.K.

For example, one of Loma’s newest technologies — a variable frequency metal detector — can detect small metal fragments using an entire spectrum of frequencies. This allows the metal detector to find metal contaminants despite changes in product “character,” including shifts in volume, temperature or packaging.

“This translates into detecting smaller pieces of metal contamination and having fewer false positive detections,” Wilson says.

Similar in its approach — but using different technology — is Safeline’s PowerPhasePlus RB, which uses “coil” technology to detect small contaminants.

“The unit has a wide aperture that is well-suited for bulk bags, yet also can inspect any dry, wet, loose or packed bulk product,” Jeter says.

Also new from Safeline is the PowerPhasePro, which Jeter describes as an ultra-sensitive metal detector that can be set to run entire ranges of products with no need to change settings. The machine detects ferrous, non-ferrous and one of the most difficult foreign materials to detect: stainless steel fragments.

Ries notes that stainless steel is indeed difficult to sort out from food products because it is conductive and non-magnetic. He says that calibrating a metal detector to differentiate between a product and metal contaminants is one of the biggest detection challenges and often leads to false positives.

One metal detector that addresses this issue is the Unicon machine from S+S Inspection Inc., Tucker, Ga. The company says operators can set a Unicon to automatically recognize a product and store this information so it will identify it each time it is processed.

Metal detection is an important and effective first line of defense against metal contaminants, but it’s usually not sufficient as the only foreign material detection system in a processing plant.

Notes Ries, “While the raw material can go through metal detection, X-ray systems are needed because a lot of refrigerated and frozen food products are packaged in metal trays. You can’t use magnetic metal detection after the tray is there.”

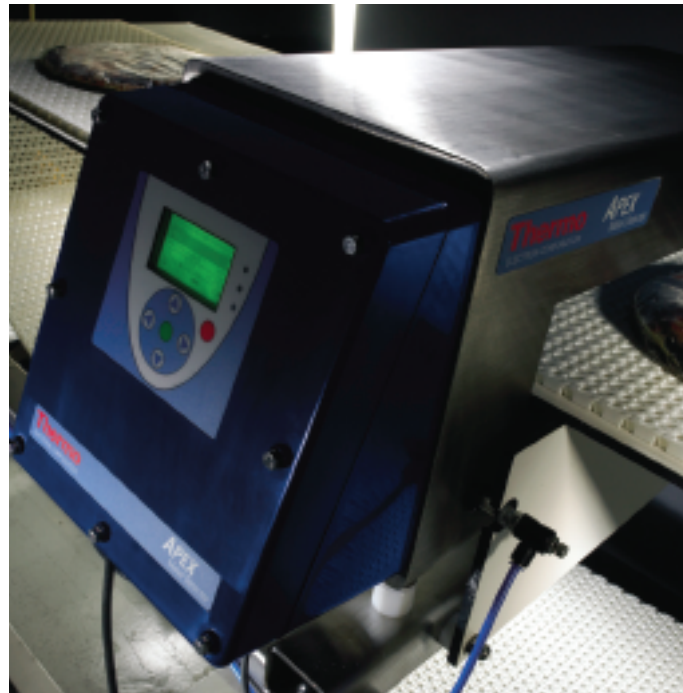
X-ray machines can be used to find bone, stones, plastic, rubber and other non-metal materials. Moreover, processors can use X-ray technology to spot broken and damaged products as they travel through production.

“Clearly, X-ray technology has come a long way in the past 10 years for food processors,” Wilson says. “The equipment is becoming more user-friendly to operate, is proving more reliable to deal with refrigerated and frozen food environments, and the initial costs are much lower than just a few years ago.”

And if producers need more encouragement to go the X-ray route, some retailers now are requiring that their suppliers have them in place, Ries says.

He notes, “For products such as spinach that contain iron, metal detection isn’t a good option.”

Thermo-Fisher Scientific offers POWERx high-performance X-ray



**Metal detection is a good first line of defense against contamination.**

machines, which are available in a variety of models designed for upright or flat packaging. Machines come equipped with software to monitor and measure product weight and store the information for traceability.

Safeline takes things a step further with its PowerCheckPlus, which not only detects contaminants including metal, stone, bone, glass and dense plastics; but also inspects package seals to ensure no product has been packaged incorrectly or has been compromised somewhere along the line.

“The system stores images of rejected products for further analysis and ultimate product traceability,” Jeter says.

Tracing the problem really is the most important part of contamination prevention.

Wilson concludes, “Finding the contamination is a big step, but what reactions are taken to eliminate future similar contaminations are just as important.” **RFF**