Deli meat has surged in popularity to the degree that it accounts for a sizable share of retail sales, which translates into higher production opportunities for manufacturers of the ready-to-eat (RTE) products. That’s the good news. The other side is that the ubiquitous impact of Listeria monocytogenes (Lmono) continues to create food-safety problems for manufacturers of RTE products. This report focuses on the food-safety aspects of producing deli meat and basic production procedures. A select number of deli processors participated in the “best strategies” section. They include Land O’ Frost, Applegate Farms, West Liberty Foods, Nature’s Premium Brand, Deli Brands of America, and Farmland Foods. Since deli meat, cold cuts and luncheon meat share a traditional link as a category, several meat scientists were asked to clarify the matter related to a definition. Their contributions are included in Part Two.

This marks the fourth report in The National Provisioner’s Technology Journal Series. Previous reports covered bacon, ground beef and sausage. NP
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PART ONE: OVERVIEW

The primary benefit in terms of meeting consumer demands is that deli products are precooked and thus qualify as convenient food that fits busy lifestyles. Deli meats comprise a versatile line of products suitable for lunch, dinner, snacks and appetizers.

“I believe the manufacturers producing deli meats have excelled in providing an affordable safe food supply,” confirms John Butts, vice president of research for Lansing, Ill.-based Land O’ Frost, one of the world’s largest providers of luncheon and deli meats. “Convenience, consistency and value are among the most desired traits today.”

Land O’ Frost pioneered retort packaging, a technology that provides longer shelf life at room temperatures without chemical additives, in the 1980s. Like other deli-meat processors, Land O’ Frost joined the ultra-thin deli-style shaved meat trend early on.

Joe Corday, extension meat specialist at Iowa State University, applauds the deli-meat industry for its increasing use of technology in its production programs.

Continued on page DTJ-4

Technology advances in deli processing

1. Sanitary equipment design
2. Sanitary facility design
3. Pathogen inhibitors: lactate and diacetate
4. Pasteurization processes for packaged product, HPP*, heat
5. Best practices: sanitation process control
6. Identifying and eliminating growth niches on RTE area
7. Automation
8. Worker safety

*high pressure processing

Source: John Butts, VP Research, Land O’Frost
“It’s getting better and better all the time,” he says. “The industry is doing a great job concerning quality, consistency and food safety.”

The deli-meat category, especially “high-quality” meats sold in retail delis, includes seasoned meats and solid-muscle cuts such as ham, roast beef and turkey. “When we thought of deli meat before, we thought of high quality,” Corday explains. “Now we see a big selection in retail that is high-quality, thinly-sliced meat packed in MAP.”

Corday adds that unlike in traditional packs that inhibited easy product separation, MAP works because of its “loose-pack” feature. MAP is a packing solution designed to enhance shelf life. Experts conclude that nitrogen-only atmospheres (absolutely excluding oxygen from the air) or by adding slight concentrations of carbon dioxide can effectively change the aspect and preservation of different types of deli meats.

For Butts, other critical issues concerning deli-meat production include ensuring that the workforce skill base reinforces the process knowledge required to control both safety and quality practices.

“Maintaining consumer confidence in our products as we work our way through the minefields we face, such as Listeria, Salmonella, nitrite and cloning is critical,” he concludes.

To be sure, food-safety challenges abound for meat and poultry manufacturers of deli meats due to their vulnerability to bacterial contamination — especially Listeria monocytogenes (L mono).

The points of vulnerability to L mono on the processing floor include areas dedicated to slicing, peeling, re-bagging and cooling semi-permeable encased product with brine solution.

“The natural habitats of this pathogen include soil, water, sewage, decaying vegetation and silage,” reports John Sofos, Ph.D., a distinguished professor at Colorado State University’s center for meat and safety and quality. “The environmental contamination results in feed and animal contamination and fecal excretion to complete the contamination cycle.”

Manufacturers and distributors of RTE products must implement procedures targeting hygiene, sanitation and food safety in battling threats linked to microorganisms. “Other efforts may include upgrading older plants including drains and traffic patterns,” Sofos adds.

Post-lethality processes include a combination of hurdles concentrating on physical, chemical and biological hazards.

“Plant audits should address plant and equipment cleaning and sanitation programs and procedures,” Sofos continues. “Other procedures include good hygienic practices by personnel, GMPs, written SOP, employee training, HACCP monitoring and corrective action activities and record maintenance.”

Food science, technology and equipment automation are also invaluable tools.

For example, advances in nanotechnology benefit supermarket deli department pathogen-detection arsenals. U.S. scientists have developed a portable device capable of detecting the presence of chemicals, pathogens and toxins in meat and other food products. Thanks to its instant pathogen monitoring feature, this technology eliminates the need to send product samples to off-site laboratories for pathogen checks. *

“Foreign objects and pathogen control are the most significant and frequent concerns for deli meats,” Butts emphasizes. “Cooking regarding time and temperature is a universal CCP [critical control point] in RTE products. As an industry, we have done a very good job in process control for this hazard.” NP

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PART TWO: DEFINING DELI MEATS

A definition for deli meat is not exactly clear-cut, given its connection to other references such as luncheon meat and cold cuts.

“A lot of times people say they are one and the same, but luncheon meat is more of a sausage product like bologna or cotta salami,” explains Joe Cordray, extension meat specialist at Iowa State University. “I don’t think of solid muscle cuts like ham or turkey as luncheon meat. Most times, these fall in the non-shelf-stable category. Also, luncheon meat is typically sliced thicker than deli meat and at retail it is vacuum packed rather than in modified atmosphere packaging.”

Adding to this definition, Jeff Sindelar, extension meat specialist at the University of Wisconsin in Madison, says, “Technically they are the same. There are probably some folks who distinguish them. Deli meat is sometimes defined as products that go into the deli for further slicing, whereas luncheon meats are prepackaged for self-service areas.”

Meanwhile, Liz Boyle, professor and extension specialist of meat science at Kansas State University, gives this description:

“Deli meats are the large chubs going to the deli and sliced on site for consumer use. In peg-board products, you have deli-style, which implies it is freshly packaged product from the deli.”

Experts agree that products in the cold cuts/luncheon meat category by definition variously include cheeses and precooked or cured meat products served cold on sandwiches or party trays. They are purchased at supermarkets or grocery stores pre-sliced in vacuum packs or at a delicatessen or deli counter, where they may be sliced to order. The fat and sodium contents are higher in pre-sliced cold cuts than sliced-to-order products. Such ready-to-eat (RTE) products are perishable refrigerated or frozen items that require no further heating before consumption.

USDA includes deli meats in its RTE classification in line with the following examples:

Deli products are RTE meat or poultry products, such as cut bone-in hams, bologna, boiled/baked ham, roast beef, turkey breast and chicken roll. They are typically sliced, either in an official establishment or after distribution from the establishment and typically assembled in a sandwich for consumption.

Dried meat and poultry products include:

- Cooked or otherwise processed whole or comminuted product include: (A) cooked/cured sausages such as bologna, hotdogs, Wieners, turkey franks, cotta salami and poultry roll; (B) cooked/smoked sausages such as Berliner and cheese smokies; (C) cooked sausages such as pork sausage patties and brown and serve sausages; and (D) cooked pastrami, corned beef, roast beef, roast pork, cooked ham, fried chicken, cooked/breaded chicken nuggets.

Fermented meat and poultry products include:

- Lebanon bologna, pepperoni, cervelat (German cured sausage made from pork and beef), chorizo (very spicy Mexican or Spanish pork sausage), Genoa or Italian salami, summer sausage and cacciatore (dry sausage)

Salt-cured products include:

- Meats such as Coppa (flavor similar but smaller shapes than Copocollo, which originated in Italy, and is made from cured sow shoulder butts for their dark-red color and higher-fat content) country ham, Parma ham, prosciutto and dry-cured duck.

The 1990s ushered in pre-sliced, pre-packaged deli meats in ultra-thin and shaved portions, and more flavored and seasoned meats.

Defining deli is about more than identifying products in the category, however, it also is about how the category is positioned in the marketplace — which is not lost on processors. They know the importance of building and protecting their deli brands. As one processor summarized, a failed launch, a drop in quality, or a whiff of scandal can damage credibility.

One approach concerning brand identity along with redefining the deli category involves new flavors and ingredient applications.

As consumer needs and perceptions change, so must our industry,” confirms Bill Marion, vice president, operations, Lansing, Ill.-based Land O’Frost. “Lunchables [Oscar Mayer product] is a noted example of how a need was identified and satisfied. Meanwhile, organic and natural products continue to grow in popularity. Green is coming. How will we react? The aging baby boomer population wave may create unique opportunities.

“As each of these waves pass, the landscape of the retail shelf space changes,” Marion concludes. “These changes drive a growth or demise.” NP
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When Canadian officials confirmed that an outbreak of deli meat contaminated with *Listeria monocytogenes* (*Lmono*) was linked to the deaths of at least four people during the summer of 2008, the tragedy reconfirmed the pathogen’s deadly impact on ready-to-eat (RTE) meat products. Traced back to processed meats produced at a plant operated by Toronto-based Maple Leaf Foods Inc., this outbreak not only bore the blame for lost lives but also the illness of more than 25 others.

*Lmono* has become the bane of RTE meat production and its impact does not end at geographical boundaries. In short, like other pathogens, it is a global enemy. Although *Lmono* became a documented cause of foodborne fatalities and severe illnesses in the 1980s, it was a decade later that scientists identified it as an animal pathogen.

“Foreign objects and pathogen control are the most significant and frequent concerns for deli meats,” Bill Marion, vice president of operations, Land O’ Frost, emphasizes. “Cooking (time-temperature) is a universal CCP in RTE products. As an industry, we have done a very good job in process control for this hazard [Lmono]. USDA data for higher processors (those producing greater than 10 million pounds a year) shows they have an excellent record for *Listeria* control. The techniques to attain this level of control need to be applied in many of the lesser volume plants.”

Characteristics of *Lmono* that make it a headache for the industry include its widespread presence in the environment and its ability to survive in adverse conditions, including high-levels of salt and cold storage, where it continues to grow at slower rates than in warmer settings, reports John Sofos, Ph.D., Colorado State University. Another factor is its high fatality rate. At 20-30 percent, *Lmono’s* impact is much higher than the human health impacts of *E. coli O157:H7*, *Salmonella* and *Campylobacter*.

The culprit plant in Toronto, which ultimately closed to undergo a thorough sanitizing, is one of 23 Maple Leaf operates. The incident also triggered a ripple effect on the company’s business by posing a major threat to its survival, while also hurting its customers including other meat processors and retail stores. Reports indicated estimated costs associated with the Maple Leaf recall would mount to $20 million before taxes as the company deals with reimbursements for returns, factory cleanup and other expenses.

As Jeff Sindelar, extension meat specialist at the University of Wisconsin in Madison, explains it, there are always critical issues confronting RTE meat-processing operations. Deli-meat production has been hard hit over the years as contaminated products have called into question the industry’s processing practices and pressured federal regulators.

“The biggest challenge I see from a deli-meat standpoint is the concept that we have to be very conscientious and careful in a post-cooking environment because those products are eaten with no additional heating, Sindelar says.

USDA’s Food Safety and Inspection Service presented updated guidelines governing post-lethality exposed RTE meat and poultry products in line with its 2007 risk-based sampling program.

During production of RTE meat and poultry products, such as deli meat or hot dogs, any secondary processing procedures such as peeling and cutting may result in cross-contamination of *L. monocytogenes* between equipment, personnel and food. Product that undergoes this secondary

**Interventions* for processing post-lethality exposed meat and poultry products (generic timeline)**

1. **Primary processing** (formulation of products: marinating, grinding, chopping and mixing)
2. **Lethality** (cooking or other lethality step such as smoking, fermenting, drying)
3. **Secondary processing** (cooling, draining, peeling, slicing)
4. **Final packaging**
5. **Post-processing lethality** (high pressure processing, irradiation, etc.)

*Examples of interventions include the addition of sodium lactate or sodium diacetate in frankfurter formulations (Bedie et al. 2001), steam/hot water pasteurization (Murphy and Berrang 2002), vacuum-steam-vacuum (Kozempel et al. 2000), and antimicrobial packaging (Cagri et al. 2004)*


*DELTI TECHNOLOGY 101*

*PART THREE: FOOD SAFETY*
processing is referred to as being post-lethality exposed, the report said.

“Critical control points are cooking and cooling, if you mess those up, you don’t have a safe product,” concludes, Ron Tew, vice president of operations, Deli Brands of America.

PART FOUR: PRODUCTION BASICS

deli-meat processors know that incorrect or faulty manufacturing procedures on the front end can become a nightmarish problem on the back end at the slicer.

Consider the case involving Maple Leaf Foods, a leading food processing company, based in Toronto Canada, which was forced to recall deli products this summer beginning with two types of “cold cuts” and eventually expanding to 220 products. The outbreak, linked to 12 deaths at the outset, was blamed on deli meat contaminated with Listeria monocytogenes. Weeks later, the company acknowledged that physical evidence and test results provided by the Canadian Food Inspection Agency suggested the most likely source of contamination was “a possible collection point for bacteria located deep inside the mechanical operations of two slicing machines”.

In mid September, the company reported that slicing equipment at its Bartor Road facility, the point of contamination, had been completely disassembled, deep cleaned and tested multiple times. Moreover, the company reported that “slicing equipment across the company is subject to daily disassembly prior to daily cleaning and regularly scheduled intensive disassembly to verify elimination of potential harborage points, well beyond industry standards.”

Listeria control is a major issue concerning deli-meat production acknowledges Liz Boyle, professor and extension specialist, meat science, Kansas State University.

“There was just an outbreak in Canada with Listeria and processed meat products,” she confirms. “That’s something of concern in deli operations, particularly as it relates to not cross-contaminating products in retail deli and companies formulating deli products to make sure there is no cross contamination. Deli products are typically stuffed in casing, clipped and heat processed so as not to be re-exposed to the environment. They may also be vacuum packaged with casing. There is a risk of Listeria post-process-contamination exposure if casing is peeled. We will see further actions taken in delis as far as slicing operations to make sure there are controls for food safety [purposes].”

Addressing issues such as blending, stuffing, cooking and cooling repeatedly and consistently is the best way to avoid problems at the slicing stage, experts says. Moreover, as raw material prices climb, processors may look for ways to “cheapen” their formulation. The effects of these formulation changes need to be taken in the context of the effect that they have on food safety.

Continued on page DTJ-12

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will have on metrics such as throughput and yield.

“This is true in terms of product quality and characteristics,” confirms Ed Mills, associate professor of animal and dairy science with a focus in meat processing at Penn State. “A weak emulsion or formulation problems can occur. Getting product to act as it’s supposed to off the slicer blade is dependent on texture, tuckiness, limpness or lack of the meat, everything is dependent on this — chilling, tempering, formulation, emulsion process, peeling the casing and handling the log before slicing.”

**Deli-meat processing issues**

As John Butts, vice president, research for Land O’ Frost, explains, processing techniques for deli meats vary as greatly as the products themselves.

“The challenge for the processor is to be able to match the consumer’s expectation of price and value with the available raw materials and processing equipment,” he says. “Some processes are designed for whole-muscle products, whereas others for finely comminuted emulsified products. In order to be a competitive least-cost producer (not low cost), the equipment and process must subscribe to the expectation of the end item. Variation of the end product must be controlled at the process level. This is another reason for the correct fit between process design and control vs. perceived quality of the end item.”

Meat processing as a food-production technique evolved to preserve by inhibiting or deterring microbial decomposition. In addition to preventing spoilage, preservation also results in flavorful and nutritious products.

Processed meats are regarded highly because of these two characteristics. Modern-deli-processing techniques are possible thanks to equipment innovations and sophisticated packaging systems.

**Technology as a tool**

How well is the industry doing concerning its use of technology to produce deli products?

Boyle provides the initial answer.

“It’s doing pretty well,” she says. “In terms of basic formulations, methods haven’t changed much in the last 20-to-30 years. There are emulsifiers and choppers but not a lot of new technology in extracting muscle proteins. There is more new technology with ingredients. We’re using vegetable powder with starter culture to get cured meat color without directly adding nitrites to a product. In addition, there is more high-pressure processing in pasteurization techniques. However, this is more costly and used primarily by larger companies.”

Agreeing, Ed Mills, associate professor at Penn State, says there is a lot of old technology in use, but the industry has moved forward with certain aspects of technology, particularly in packaging. Recent developments have been made in area of ingredients and label claims — specifically natural labels.

“With respect to adopting alternative procedures in color and flavor stability in natural products, Hormel is at the front,” he reports. “Oscar Mayer also has products in that area with excellent performance characteristics in terms of taste and palatability.”

Mills says there has been a lot of emphasis on cost of formulation and least-cost formulations, and it isn’t anything new. “There will be a movement in raw materials and changes in formulation, but the deli-meat area is one of the highest margin areas we work in,” he explains. “It won’t be immune to price increases, but it won’t be affected as much as other product categories.”

Offering another view on the use of technology in deli-processing programs, Jeff Sindelar, extension meat specialist at the University of Wisconsin in Madison, says it is surprising to see how much...
technology is incorporated into these processes. “Newer technology in the U.S. (many times technology is established in Europe and brought over) is [providing] better understanding of tumbling products such as ham,” he explains. “A few companies that manufacture tumbling and mixing systems are able to use heating and cooling programs during tumbling to maximize brine and protein extension. Some of those technologies have only taken off in the last five years.”

The first critical step on the processing floor involves the right raw material. “An absolute must is high-quality raw materials,” emphasizes Joe Cordray, extension meat specialist at Iowa State University. “Product needs to be properly thermal processed, properly stabilized or cooled after thermal processing, and it has to be handled properly and cautiously in the post-packaging environment. The key to success in the meat industry is quality, consistency and food safety.”

PART FIVE: BEST STRATEGIES

L and O’Frost, a family-owned company headquartered in Lansing, Ill., and rated as the third-best selling brand of packaged luncheon meats in America, celebrates its 50th anniversary in 2008.

Carando Foods, of Springfield, Mass., and a division of Kansas City, Mo.-based Farmland Foods Inc., marks 75 years in business in 2008. It is positioned as one of the largest and most complete suppliers of Italian deli and specialty meats in the United States.

Established in 2007, Northfield, Ill.-based Nature’s Premium Brand LLC, a leader in premium, all-natural fresh pork, became the first North American pork company in 2008 to track DNA for reliable and accurate traceability back to the farm where the animals were raised.

West Liberty Foods LLC, incorporated in 1996 as the meat processing company of the Iowa Turkey Growers Cooperative, is the largest supplier of cooked sliced sandwich meat for Subway® restaurants. The company reportedly supplies Subway franchises with more than 1 million pounds of product a week.

Applegate Farms was founded in 1987 in Branchburg, N.J., when Stephen McDonnell purchased Jugtown Mountain Smokehouse, a traditional old smokehouse dating back to 1941.

Deli Brands of America was founded in 1932 in “Corned Beef Row” on Lombard Street in Baltimore, Md. It grew from a home-based corned beef manufacturer to the area’s largest independent broad-line foodservice distributor and processor.

Collectively, these companies may have operated for 225 years, but what links them together in this regard are the systems and procedures they employ to ensure pathogen-free meat manufacture first and foremost. Product quality and palatable attributes are also critical goals.

Of the numerous critical issues impacting deli-meat production, cross contamination and pathogen control are primary concerns of which all participants in this section agree.

Listen to Kevin Caputo, Carando Foods’ vice president of sales and marketing. Carando produces bulk and pre-sliced salami including Genoa, Italian origin, and hard salami, German origin. The salami is packed in a variety of packaging sizes for retail and foodservice applications.

“Food safety concerns are the main thing in processing — watching out for [such pathogens] as Listeria and E. coli. Listeria is a post-processing bacteria that we have prevented by having excellent sanitation programs and limiting access to the RTE environment,” Caputo says. “We have to have a process in place to treat it and heat it after the fact. With dry sausage the water activity is so low that the product is shelf stable when it’s produced. We don’t have the same types of issues as fresh product.”

Concerning “best strategies,” the Carando production process begins with the selection of mostly pork and beef product from the operation’s dedicated raw material suppliers. Product is made fresh weekly. Fat is added to lean pork and beef cuts to develop the desired mixture. Processing involves chopping, grinding and the addition of seasonings. A starter culture is added and the product is fermented and hung in a dry room for a number of days. In-house quality assurance inspectors examine the product, which must also meet HACCP and USDA requirements before it is packed for shipment. Packages need to maintain a tight seal to perform well, long term. Carando uses barrier bags and roll-stock packaging.

“Temperature is the main thing we look at in terms
of food safety,” Caputo emphasizes. “It is understood, but we have to make sure the cold chain is maintained through the entire process to get the best quality raw material. We need to maintain product at 40°F or less after packaging.”

Dennis Binder, director of supply chain for Nature’s Premium Brand, says cross contamination with other products being processed in the facility is the major control issue for his operation. “Production needs to start with machinery that is cleaned and sanitized,” he says. “There are airborne pathogens, so processors need separate rooms for natural versus traditional meats.”

The company offerings include all-natural deli meats such as roast beef, turkey breast, ham and salami, along with antibiotic-free fresh pork and all-natural sausages and bacon. Its ultra-modern pork facility features handling and processing methods that emphasize humane and animal welfare practices. Its eco-sustainable practices include air-chilling to conserve water and maintain high levels of sanitation. Nature’s Premium also uses high pressure pasteurization for increased shelf life and added food safety assurances.

Nature’s Premium supplies raw material to its manufacturing partners for processing to its specification. The raw material is returned for further processing in the Nature’s Premium facility. “All natural products need to be processed first thing in the morning after inspectors sign off on equipment,” Binder explains. “Raw products are seasoned, tumbled and made into logs before going through the slicing machine.”

West Liberty Foods LLC, which operates three processing plants in Iowa, primarily produces products for customers to sell under their own brand names. “We have the ability to slice all proteins including, but not limited to turkey, ham, chicken, roast beef, corned beef, pastrami, dry sausages and cheese,” Janelle Plantz, marketing manager, explains.

After raw material arrives, it is checked for quality attributes required by specification. They include temperature and age. Products may be cured by injecting a marinade and vacuum tumbling or blending, or else by vacuum blending or tumbling a marinade. Curing ingredients commonly used include sodium nitrite in combination with sodium erythorbate to accelerate the curing process. Cured products are held under refrigeration to allow curing reaction time prior to further processing. Hold times vary by product type from 0 hours to 48 hours.

“Curing may also be accomplished for ‘natural’ labeling by using combinations of celery juice or power, which contain high amounts of naturally occurring nitrate,” Plantz reports. “In combination with a lactic acid starter culture, the nitrate is converted to nitrite, allowing the curing reaction to occur.”

The production process at Deli Brands of America involves purchasing fresh raw material to offer a 30-day shelf life for vacuum-packaged products. The raw material is predominantly top round meat.

“We may buy meat pre-trimmed or may trim it ourselves,” explains Ron Tew, vice president of operations. “Usually cap-off top round is pretty well trimmed. We add ingredients through an injection system. We could tumble ingredients in, but if we need more than 10-to-15 percent solution, it needs to be injected. There are some economic reasons to inject, but also concerning food-safety issues and safety reasons.”

A dark rub for the dark roast beef color is added in the final stage of vacuum tumbling. The cooking preparation calls for first putting the meat in a vacuum bag or netting to achieve the square pattern of an old fashioned tied look. The product is cooked in full steam ovens at 200°F for up to six hours. “This is where the first critical control point comes for roast beef,” Tew points out.

The product is cooled, chilled and
packed in about six hours using air chill, high velocity chilled air. “The ideal packaging is in a bag for raw product and also cooked in a bag to not be opened until at the retail store,” he says. “This provides the safest, longest shelf life and best value, but it’s a matter of appearance. If displayed in the deli, it needs to look good and these bags don’t always look good.”

Applegate Farms’ natural deli-meats line includes chicken, turkey, roast beef, ham and ham, all of which are produced without antibiotics, nitrates, phosphates or growth hormones.

The production process begins when raw protein is combined with broth and dry ingredients such as salt, sugar and spices.

Notably, rising raw material prices are impacting product formulations. “Some processors could be adding more water to their processed meats to secure the same profit,” notes Diane Kull, vice president of research and development and quality assurance. “Other processors might be raising cost to their customers to ensure the same profit levels.”

Concerning the Applegate processing program, the mixture with ingredients added is massaged by tumbling for the marinating process. It is “stuffed” or hand formed into the appropriate shape (slicing logs might be stuffed into a casing, whole muscle product might be hand placed into netting).

“Several options are available for deli packaging,” Kull notes. “Ideal is in the eye of the beholder. However, packaging must have barrier properties. It needs to ensure shelf life, so it either needs to be a vacuum package or MAP. It also must be easy to open and reseal for consumer use.”

The product is fully cooked and or smoked and fully chilled to below 40°F.

After the casing or netting is removed, product — sliced or logs — is packaged, which includes adherence to all labeling requirements. It is held in cold storage until shipped to customers.

Deli meats come in many forms. Land O’ Frost’s offerings are primarily sliced, packaged meats including beef, ham, chicken and turkey.

“While we have many other products sold in different formats, sliced products that deliver superior taste and eating quality are our claim to fame,” explains Bill Marion, vice president of operations. “Processing techniques for deli meats vary as greatly as the products themselves. The challenge for the processor is to be able to match the consumer’s expectation of price and value with the available raw materials and processing equipment. Some processes are designed for whole-muscle products with a natural appearance, and others for finely comminuted, emulsified products.”

Besides its core product lines, Land O’ Frost also manufactures custom products for its industrial and specialty meats customers. “There are meat ingredients to be used in a diverse set of applications from fast-food sandwich to home-cooked entrees,” Marion says.

The most important first step in ensuring perfectly executed processing is to know your supplier, Marion advises. “Commodity purchases often require special treatment, whereas trusted suppliers with proven track records know your requirement,” he explains. “The supplier’s ability to fulfill the customer’s requirements dictates actions required to be taken upon delivery.”

Concerning the ideal packaging for deli meats, Marion notes that packing films must provide an excellent oxygen barrier, preferably with a saran layer, which also is essential for flexible films. Land O’ Frost generally prefers gas-flushed flexible packaging using nitrogen gas.

“Whatever type of packaging is chosen, it is essential that thorough testing is performed to assure that product quality and food safety are not compromised,” Marion concludes. “It is in this area that Land O’ Frost has long been an industry leader.” NP
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