Meat Messenger

North Dakota State Meat and Poultry Inspection Program 2015 Quarter 3

NDDA Hosts 2nd Annual Snack Stick Contest

By Nathan Kroh

Maple Valley Meats of Enderlin won the 2nd Annual Snack Stick Contest sponsored by the North Dakota Department of Agriculture (NDDA) at the 27th Annual Pride of Dakota-KMOT Day at the 2015 State Fair in Minot.

The contest was a blind taste test among fairgoers, with each taster casting a single vote. Over 200 people tasted and compared the meat sticks. Maple Valley was able to edge out Reister Meats and Catering, Streeter and Uncle Larry's Beef Schtix, Fargo.

Pride of Dakota had a tent with vendors promoting high-quality North Dakota made products. Another contest featuring foods made with North Dakota honey ran simultaneously with the meat stick contest using the same single vote format.

After casting their ballots, each voter was given a card identifying the name and city for each contestant. Fairgoers were impressed with all of the contests' offerings.

NDDA presented Maple Valley Meats with a certificate to display in their shop.

Thanks to the participating companies. The contest was a success and Pride of Dakota and NDDA are looking forward to hosting the 3rd Annual Snack Stick Contest.

For more information about the contest, contact Jamie Good, NDDA local foods specialist, at (701) 328-2659 or email him at jgood@nd.gov.

What would you like to read in the next issue?

The Meat Messenger is your newsletter. If you like the content, please feel free to share this issue with your employees, your livestock producers and customers. We welcome any questions, comments, or suggestions for future topics. Please contact **Nathan Kroh** at nkroh@nd.gov or 701-328-4767 or **Julie Nilges** at jnilges@nd.gov or 701-204-3248.

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Agriculture Commissioner
Doug Goehring

Livestock Services Program Manager
Shaun Quissell

Director of Meat Inspection
Andrea Grondahl, DVM

Administrative Assistants
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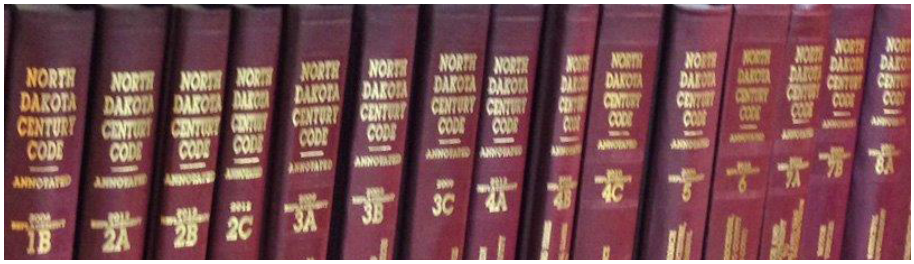
Shawn Steffen
Cami Metzger *Certified Grader
Joshua Epperly
Whitney Vogel
Sherlynn Olson
Kayla Wesoloski

Assistant/Relief Inspector
Julie Nilges *Certified Grader

Please address all correspondence to:

State Meat Inspection
North Dakota Dept. of Agriculture
600 E. Boulevard Ave., Dept. 602
Bismarck, ND 58505-0020
(701) 328-2231
(800) 242-7535
FAX: (701) 328-4567

www.nd.gov/ndda
ndda@nd.gov



Regulation Reminder

CHAPTER 7-13-07 REINSPECTION and ADULTERATION or MISBRANDING

7-13-07-01 Reinspection
7-13-07-02 Adulteration or Misbranding

7-13-07-01. Reinspection. After the first inspection, inspectors, if they consider it necessary, shall reinspect the animal carcasses, meat, meat byproducts, meat food products, or parts thereof to determine whether such carcasses, meat, meat byproducts, meat food products, or parts have become adulterated since the first inspection. If an animal carcass, meat, meat byproducts, meat food products, or animal part is then found to be adulterated, it must be destroyed for food purposes by the establishment in the presence of an inspector.

7-13-07-02. Adulteration or Misbranding. A person or any slaughtering establishment, meat processing establishment, or custom-exempt plant may not misbrand or adulterate any meat, meat byproduct, or meat food product or misrepresent the products to its customers.

History: Effective August 1, 2000.
General Authority: NDCC 36-24-24
Law Implemented: NDCC 36-24-18

Did You Know?

Living high on the hog, meaning that you are living a more luxurious lifestyle, is actually a reference to the quality and historical cost difference for cuts of pork. Wealthy people ate cuts from "high on the hog" like loin and hams, while paupers ate lower quality bellies, tails, feet and cracklings. Living high on the hog originally alluded to people's status, wealth and affluence.

Minnicks, M. "What it means to live 'high on the hog." *examiner.com.* AXS Network, 5 November 2011. Web. 22 June 2015. <http://www.examiner.com/article/what-it-means-to-live-high-on-the-hog>

The Amazing Meat & Poultry Supply: A Snapshot

The United States population was over 307 million Americans as of 2011, and they are privileged to have the lowest percent of their disposable income being used for food. Americans spend 6.7% of their income on food, while other countries like India or the Philippines spend 48% or more of their income on food.

2011 Animal Protein Production for the United States

Red Meat Animals	Pounds of Protein
91 million cattle	26 billion
66 million pigs	22 billion
5.3 million sheep	148 million
Poultry Animals	**Pounds of Protein**
9 billion chickens	37 billion
242 million turkeys	5.8 billion

Dietary Guidelines recommend that 15-35 % of daily calories come from protein. Meat, poultry, eggs, dairy and fish are "complete proteins," meaning they provide all the essential amino acids for health, while other plant proteins can provide the same amino acids if a large variety of plant products are consumed. The USDA statistics show that the daily average meat and poultry consumption is very close to the 5-7 oz. suggested intake. Women are eating 4.4 oz. and men are eating 6.9 oz. on average. U.S. meat and poultry is made into over 21,000 products, according to the National Retail Meat Case Study. The demand for U.S. meat is very strong with nearly 3.4 million metric tons of beef and pork being exported in 2012. The U.S. meat and poultry industry contributes $894 billion to the U.S. economy.

"The Amazing Meat and Poultry Supply: A snapshot." *The Market Works: Highlighting Progress in the Meat Industry.* American Meat Institute, n.d. Web. 28 Nov. 2014. <http://www.themarketworks.org/sites/default/files/uploads/The-Amazing-Meat-and-Poultry-Supply.pdf>

4 Ways to Prevent Salmonellosis

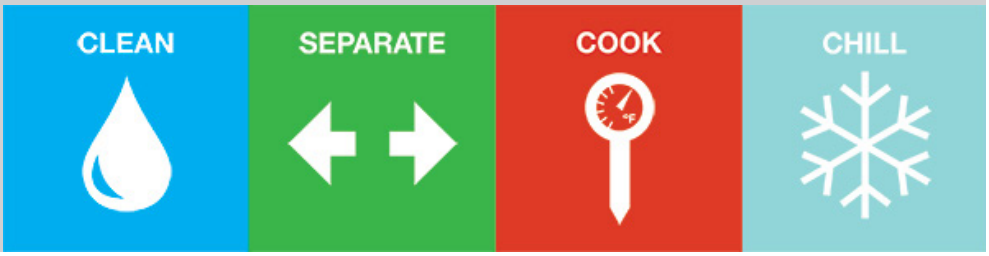
1. CLEAN: Wash hands with soap and water for at least 20 seconds before and after handling raw meat and poultry. Also wash cutting boards, dishes and utensils with hot soapy water. Clean up spills right away.

2. SEPARATE: Keep raw meat, fish and poultry away from other food that will not be cooked. Use one cutting board for raw meat, poultry and egg products and a separate one for fresh produce and cooked foods.

3. COOK: Cook raw meat and poultry to safe internal temperatures before eating. The safe internal temperature for meat is 160° F, and 165° F for poultry, as determined with a food thermometer.

4. CHILL: Refrigerate raw meat and poultry within two hours after purchase (one hour if temperatures exceed 90° F). Refrigerate cooked meat and poultry within two hours after cooking.

"Salmonella Questions and Answers." *USDA Food Safety and Inspection Service.* USDA Food Safety and Inspection Service, 7 August 2013. Web. 29 July 2015. <http://www.fsis.usda.gov>



Dismantle Your Equipment for Effective Cleaning

By Nathan Kroh

Are you absolutely certain your equipment is clean? Most meat processing equipment is full of many moving parts, lots of nooks and crannies, and tight areas that are just plain difficult to clean. Removing and cleaning every part is a tedious job, but it is critically important for food safety and can make a significant difference in product shelf life. Microorganisms can harbor in the tightest and smallest of places, where food may not touch directly, but microorganisms don't necessarily stay where they are harboring. Wiping down equipment with a rag can smear pockets of bacteria around and splashing water can flush bacteria from their nooks where they will contaminate food contact surfaces. Small pockets will accumulate debris and bacteria, creating sanitation issues if not cleaned on a regular schedule.

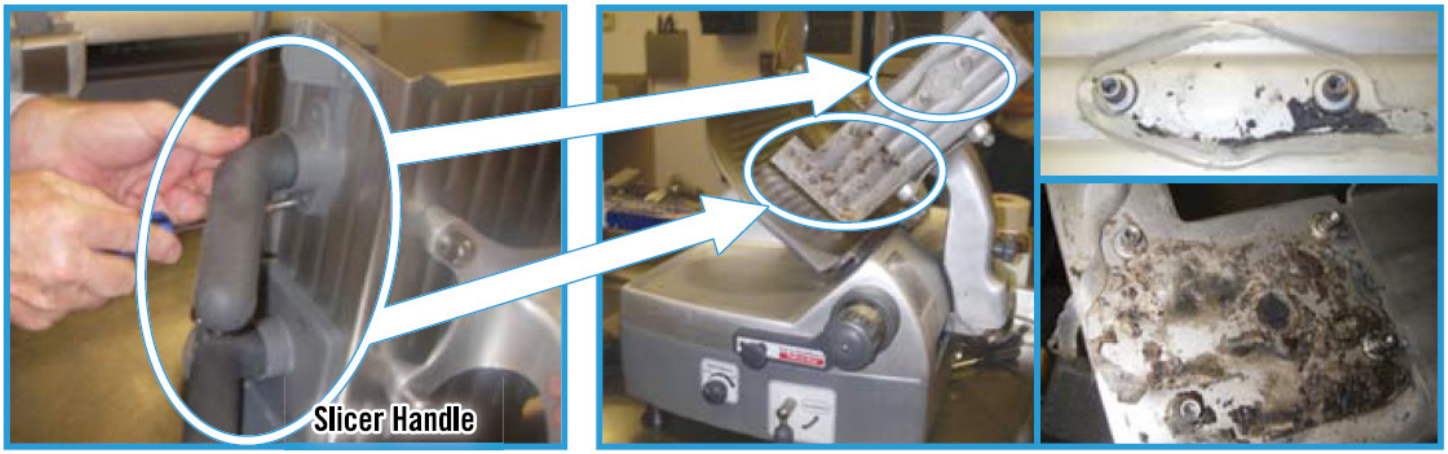
If two sections of a machine are held together with bolts, there is a very good chance that bacteria will colonize between those two sections over time. For example, most plants have a band saw for cutting steaks, but have you ever dismantled the thickness fence?

The picture at right is the stainless guide that is used to set the thickness of the meat being cut on the band saw. The top stainless piece is bolted to the aluminum bracket being held below. While the fence was still assembled, there was only a sliver of space between the plate and the bracket. It looked clean, but the stainless plate had begun to warp slightly, so we took apart the fence to find what is shown in the picture. Over time, fat, meat, bone dust, bacteria, mineral deposits, residues and other materials collected between the two plates. The accumulation of debris is a perfect area for bacteria to colonize. Every time that equipment is handled, used, or even cleaned, bacteria can dislodge, contaminating other parts of the saw and any meat that passes along

the surface.

The six nuts holding on the fence plate took only a couple minutes to remove and this area could have been cleaned before the aluminum

continued on page 5



Surfaces under the slicer handle can accumulate food soil and debris and require monitoring to prevent build-up.

Picture from the FDA "Keep Commercial Deli Slicers Safe" poster.

Dismantle Your Equipment for Effective Cleaning, continued from page 4

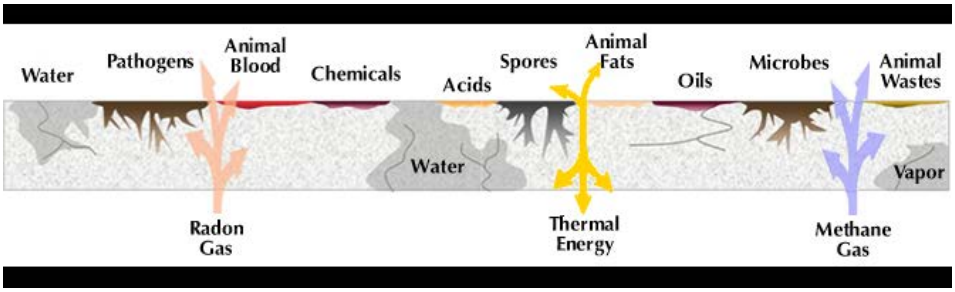
bracket began to corrode. The bottom metal bracket in the picture was permanently etched and corroded. To prevent damage to the equipment and limit any possible colonization of bacteria, susceptible areas of your equipment should be completely disassembled and cleaned. This would be a good time to perform maintenance procedures. Maybe once a month or even quarterly might be sufficient to prevent build up, but maintenance should be scheduled and performed. It may make sense to permanently seal pieces, like the thickness fence, by sealing those pieces together with silicone. Do you know exactly how each piece of your equipment is assembled? The picture at lower left from the FDA's "Keep Commercial Deli Slicers Safe" poster shows areas that are hard to clean and will collect debris that will harbor bacteria. If you have junctions between two pieces that are not clearly sealed, it may be worth your while to dismantle that and take a look at what has been collecting there. These spaces cannot be cleaned and sanitized under normal conditions, so they need to be monitored and maintained.

"Keep Commercial Deli Slicers Safe." *FDA*. FDA, 11 June 2015. Web. 23 June 2015. <http://www.fda.gov/downloads/Food/GuidanceRegulation/UCM240674.pdf >

Concrete Processing Floor Sanitation

By Nathan Kroh

Concrete may appear perfectly smooth, yet it is quite microporous. Concrete is a composite mixture of water, aggregate and cement. As the concrete cures, a structure of randomly sized, arranged and connected pores throughout the concrete is formed. The pores within the concrete create a type of capillary system through which water and other substances can migrate.



The surface of concrete in a processing plant is constantly being flooded with organic materials, which serve as the nutrient source for microorganisms. Blood, fats, proteins, microorganisms and other materials get into the small divots, rough surface and pores of concrete. These areas are great protective harborage sites for microorganisms to take up residence. Washing and sanitizing the floors will eliminate the more exposed microorganisms, but some rougher surfaces and pores allow the microorganisms to bed into the concrete and create biofilms that protect them from the sanitizing agents. Bacteria from the established biofilm can slough off and attach to boots, boxes, carts and anything else on the floor, spreading contamination where the traffic flows.

Smooth concrete is much easier to effectively sanitize. The most difficult floors to clean are cracked, heaved and pitted floors. Concrete etched through heavy traffic or chemical overspray, and cracked concrete should be scrubbed with a brush to physically lift contaminates. Cracks should be sealed with an appropriate wet-use caulk and the concrete should be sealed. Concrete sealants with antimicrobial properties can successfully eliminate both spore-forming and non-spore-forming pathogens from floors and prevent further contaminates from coming through the concrete.

Singh, M. "Concrete in processing plants an important hideaway for pathogens?" *Worthwhile Operational Guidelines and Suggestions: Broiler Processing Timely Information.* Auburn University, Feb. 2011. Web. 2 Apr. 2015. <http://poul.auburn.edu/wp-content/uploads/sites/13/2014/09/wogsfeb11.pdf>

Brucellosis: Controlled in all but Yellowstone National Park

Brucellosis is a contagious disease caused by several species of the bacteria genus Brucella. The disease causes reduced delayed conception, reduced lactation and abortion or birth of weak calves. Usually spread by direct contact with infected animals, Brucellosis was common among cattle, swine, and bison. Mainly affecting ruminant animals, humans are susceptible to contracting undulant fever from the bacteria. Undulant fever symptoms are similar to severe influenza persisting for weeks or months.

Brucellosis cost the industry over $400 million in 1952, but the Brucellosis Eradication Program has dropped the cost of brucellosis to less than $1 million per year. The Cooperative State-Federal Brucellosis Eradication Program started in 1934 has nearly eradicated brucellosis infections, moving the needle from 124,000 herds in 1956 to only 6 infected herds in 2000. The basic approach toward eradication has always been testing cattle for infection and sending infected animals to slaughter. No cure exists, but vaccines are used in areas of the country more prone to brucellosis. Studies have shown that without the Brucellosis Eradication Program efforts, the cost of producing milk and beef would increase by $80 million within 10 years.

States are designated brucellosis free if none of their cattle or bison are found to be infected for 12 consecutive months. No state has an infection rate of more than 0.25%. Brucellosis is still a major concern in free-range bison of the Yellowstone and Grand Teton National Parks. Over 50% of bison within the Yellowstone National Park test positive and the concern is that those bison may transmit brucellosis to cattle in the surrounding area. The main control was limiting bison movements outside of park lands. In 1996-97, a record level of ice and snow drove bison outside of the park looking for food. To prevent the transmission of brucellosis to cattle outside of the park, nearly 1,100 bison that exited the park were shot or slaughtered and another 1,300 or more bison starved to death inside the park. A bison management plan was put into place to maintain a wild, free-ranging bison population while minimizing the risk of transmitting brucellosis to domestic cattle. Elk populations can be infected with brucellosis as well. Elk tend to seclude themselves during calving, and they clean the birthing area to avoid attracting predators, so transmission from contact with birthing fluids and contaminated soil and vegetation is reduced. Farm-raised elk herds have a higher risk of brucellosis due to increased congregation and exposure to infected animals.

The Animal and Plant Health Inspection Service continues to develop safe and effective vaccine delivery systems that can be delivered remotely. APHIS is confident that they will be able to eradicate brucellosis in bison and elk within the Yellowstone ecosystem. A vaccine has been shown to work on bison calves, but more trials are being studied. All three states surrounding the Yellowstone National Park are officially free of brucellosis. There is no danger from eating meat, because the Brucella bacteria do not typically contaminate meat tissues and the bacteria are killed by normal cooking temperatures. The risk of brucellosis affects ranchers, farmers, and animal managers that assist calving or aborting animals. Ultimately, the best prevention is to eliminate brucellosis from all animals in the area.

"Brucellosis and Yellowstone Bison." *USDA Animal and Plant Health Inspection Service.* USDA-APHIS, n.d. Web. 14 July 2015 <http://www.aphis.usda.gov/animal_health/animal_dis_spec/cattle/downloads/cattle-bison.pdf>

"Brucellosis: Facts about Brucellosis." *New Jersey Dept. of Agriculture.* New Jersey Department of Agriculture, n.d. Web. 14 July 2015 <http://www.state.nj.us/agriculture/divisions/ah/diseases/brucellosis.html>

Science Corner: The Flavor of Meat

The flavor of meat is directly related to the composition of the tissues and the method of preparation. Flavor is dependent on the components of the meat which are water, protein, fats, sugars and trace minerals and vitamins. Raw meat is relatively bland, but when cooked the aroma and flavors of the meat are distinctive and strong. Many chemical reactions occur when cooking meat. The Maillard (pronounced: miyard) reaction is the development of thousands of flavor compounds through reaction of the sugars and the proteins. Complex chemical reactions are possible during the cooking step. The resulting flavor compounds will depend heavily on which amino acids are reacting with which sugars. The conditions of the cooking environment will also heavily influence the types of flavor compounds. Temperature, moisture and pH will affect how quickly the reactions occur and the possibilities for potential flavor development. Thousands of flavor compounds can be created, and each one will have a distinctive aroma and flavor. Those flavors can interact with each other to affect taste and smell.

Flavor is the formation of chemicals that are categorized in flavor classes. Each class of flavor can be characterized, such as classes that are nutty, roasty, cereal-like, sweet, burnt, green, astringent and so on. The Maillard reaction creates thousands of flavor chemicals, most of which are produced in such small quantities that they cannot be individually detected. The aroma and flavor of cooked meat comes from the combination of all of the chemicals formed during the cooking process. The cooking process also catalyzes reactions with the fats to create various volatile flavor compounds.

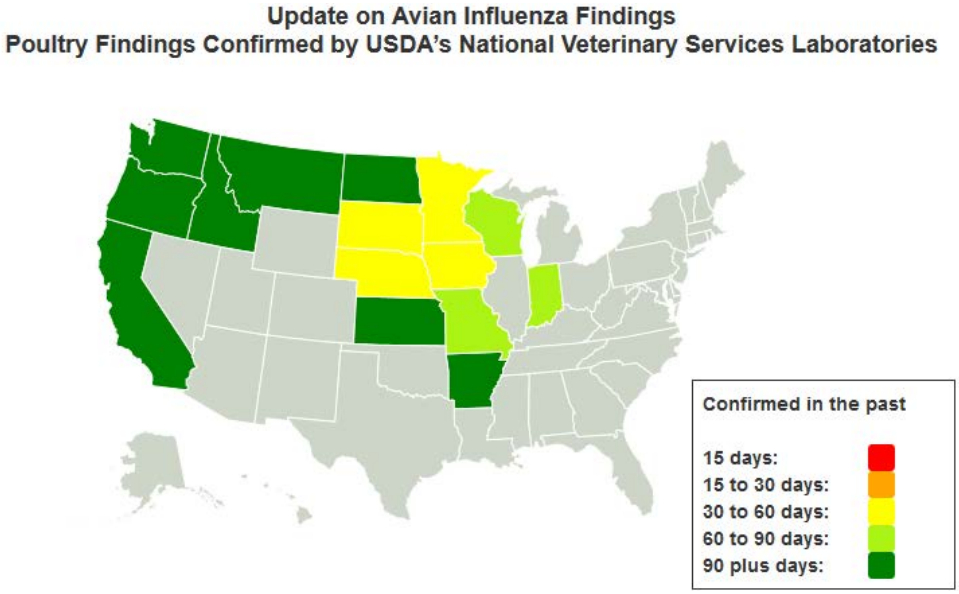
Fats are attributed to the flavor of meat and juiciness of meat; yet fats are often the culprit for rancid or off-tasting meat. Fat, and saturated and unsaturated fatty acids, are susceptible to oxidation and degradation under certain conditions. Heat catalyzes oxidation of fats (the higher the heat, the higher the oxidative reaction), further contributing to the flavor compounds developed from the Maillard reaction. Under low heat or high moisture cooking environments, the primary flavor development is from fat oxidation because the browning reaction cannot occur as readily. Fats are often the source of the unpleasant flavors associated with sulfur, or rotten egg smells, and continued oxidation after the cooking process is responsible for the warmed over flavor of day old cooked meat. Higher levels of unsaturated fats are more susceptible to oxidation and the creation of a higher number of volatile flavor compounds. Pork fat, with its higher level of unsaturated fatty acids, is a softer fat that can oxidize and pick up off-flavors more quickly than the high ratio of saturated fats in beef.

Animal fat is a mixture of different levels of saturated and unsaturated fatty acids. The types and ratios of these fats can be affected by the animal's diet, but is more so affected by the breed and sex of the animal. The genetic controls of the animals and the production of hormones influence the lipid composition, which affects the kinds of volatile flavor compounds. Keep in mind that individuals perceive flavors and aromas differently. A negative flavor for one person could be a positive attribute for another. The individuality of humans is the reason so many different breeds, husbandry methods and feed protocols exist. The flavor of meat is due to incredibly complex chemical reactions that are affected by any number of outside forces, yet the acceptability of the taste is left to the end consumer's individual perception.

Hoa Van Ba, Inho Hwang, Dawoon Jeong and Amna Touseef (2012). Principle of Meat Aroma Flavors and Future Prospect, Latest Research into Quality Control, Dr. Mohammad Saber Fallah Nezhad (Ed.), ISBN: 978-953-51-0868-9, InTech, DOI: 10.5772/51110. Available from: http://www.intechopen.com/books/latest-research-into-quality-control/principle-of-meat-aroma-flavors-and-future-prospect

Avian Influenza Update

The Animal and Plant Health Inspection Service has been tracking and reporting on the recent avian influenza outbreak. As of the middle of June, 223 detections have been reported, affecting just over 48 million birds. For a full list of detections and information about avian influenza, visit the APHIS website at http://www.aphis.usda.gov/wps/portal/aphis/home/



"Update on Avian Influenza Findings: Poultry Findings Confirmed by USDA's National Veterinary Services Laboratories." *USDA Animal and Plant Health Inspection Service.* USDA Animal and Plant Health Inspection Service, n.d. Web. 14 July 2015. <http://www.aphis.usda.gov/wps/portal/aphis/home/>

Poultry/bird movements continue to be limited

To continue to protect North Dakota's poultry industry from potential exposure to H5 avian influenza virus, the North Dakota State Board of Animal Health (BOAH) has extended its halt on bird movement to shows, exhibitions and public sales within the state in which birds from different locations are intermingled at an event. BOAH is continuing to monitor and assess the disease threat, which will be reviewed again at their December meeting after most wild birds have completed their migration. The action does not apply to approved private sales that meet North Dakota importation requirements.

FSIS Recalls & Alerts Count

Apr - Jun 2015

Allergen (soy, milk, wheat) or irritants	19
Physical or chemical contaminants	8
Bacterial contamination (E.coli, Salmonella, Listeria, C. perf)	6
Operating outside of inspected hours	3
Lack of import inspection or ineligible for import	3
Unauthorized use of inspection legend	1
Total Recalls in Second Quarter 2015	40 recalls

Class 1 recalls - 20 Reasonable probability that eating the food will cause health problems or death	**Class 2 recalls - 18** Potential health hazard situation in which there is a remote probability of adverse health consequences from eating the food	**Class 3 recalls - 2** Situation in which eating the food will not cause adverse health consequences
11,037,588 lbs. of meat and poultry implicated in recalls		

Further information on all current recalls and alerts can be found at: http://www.fsis.usda.gov/wps/portal/fsis/topics/recalls-and-public-health-alerts

Classified Ads

We are always looking for industry related items to advertise in the Meat Messenger. We post sale and want ads FREE. Contact Julie Nilges (701-204-3248) at jnilges@nd.gov or Nathan Kroh (701-328-4767) at nkroh@nd.gov with product description and contact information.

Online Auction of processing equipment, September 16th at 10:00 a.m.
Edgeley Meat Processing: Auction preview Sept 14th, 15th, and 16th. Pictures are currently available for viewing such as: band saw, grinder, mixer, tumbler, retail coolers and more. The auction will be online only, through Orr Auctioneers. (http://orrauctioneers.com/home.asp). Bidding assistance will be provided onsite during the auction preview. Be a part of the bidding action for the Edgeley Meat Processing equipment starting at 10:00 a.m., September 16, 2015.

Auction listing at http://orrauctioneers.com/auction/1000000299_EdgeleyMeatProcessingPlant.asp
Contact Larry Coon for more information at 701-658-9134 (cell) or 701-493-2327 (home).

True Brand cooler: Cooler has two sliding doors and was manufactured in 2001 - $1,000;
New one-quart plastic containers with lids: $20 per lot of 50.
Please contact Calvin or Alex for more information at 701-743-4451. Located in Parshall.

Walk-in freezer and components (4 items): (1) Three-phase Copeland compressor Hp p62 Freon, new in 2005. (Model 4RA3-100A-TSK-800, serial 05A66497R). **(2)** Single-phase Bohn cooling unit (Model 2402B serial number DCD4540). **(3)** Larkin single-phase outside evaporator. **(4)** Walk-in freezer with shelves/baskets, sharp freeze shelves and cooling unit, has four-glass doors, free standing unit, walls snap together. Please contact Denise for more information at 701-438-2334. Located in Esmond.

Slaughter/processing business located in Esmond, ND. Fully operational meat processing facility, all equipment and supplies included. Currently custom-exempt, with option for retail and/or state inspected status, many equipment/facility upgrades last four years. Very strong customer base. Please contact Denise for more information at: 701-438-2334 or 701-351-1231.
*Housing is available and the local area market is favorable for those interested.

Find us on Facebook

Our Facebook page benefits both consumers and processors with facts about inspection, rules for producers who want to direct market their products, and tips for safely preparing meat and poultry products.

Please check out our page or feel free to ask a question by signing into Facebook and searching for North Dakota Meat and Poultry Inspection Program.

The Meat and Poultry Inspection Program Facebook Page

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"Equal Opportunity in Employment and Services"

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North Dakota Department of Agriculture
600 East Boulevard Avenue, Dept. 602
Bismarck, ND 58505-0020