



Meat Messenger

North Dakota State Meat and Poultry Inspection Program

2019 Issue 1

A Message from the Commissioner

Greetings,

As the legislative session is winding down, we have some updates for you. Senate Bill 2080, which updates the dates in the North Dakota Century Code relating to federal meat inspection regulations, has been signed into law. This was just a housekeeping bill and the regulations will stay the same as they are today.

Over the past couple of bienniums, the North Dakota Department of Agriculture has had to make some tough choices and has had to cut programs but I'm proud to say that we've never cut the meat inspection program as it adds value to North Dakota agriculture. In my current proposed budget, I've requested the funds to add an additional meat inspector to meet demands now and in the future. The budget is currently going through the House Appropriations Committee and we should know by the end of April. Once we receive approval, we will fully fund this position. The North Dakota Department of Agriculture will hire this position once all funds are secured and will soon be able to add services as needed.

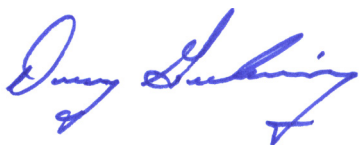


We support the meat processing industry in the state and will work to ensure we are able to provide service when it is requested. This is why I encourage you to reach out if you need additional inspection coverage for your facility now or anticipate needing it in the future. Please let us know by contacting any of the following employees, as they handle the day-to-day operation of the meat inspection program:

- Deputy Agriculture Commissioner Tom Bodine at 701-328-4758 or tbodine@nd.gov;
- Livestock Industries Division Director Dr. Andrea Grondahl at 701-328-4762 or agrondah@nd.gov.

We need to know the demand and services required so that we are able to put the best plan in place to serve you. Thank you for keeping the lines of communication open. We look forward to continuing to serve you and ensuring a safe and economical meat supply for consumers.

Sincerely,



Doug Goehring

Meat Messenger

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Sodium Erythorbate: Preserve Color and Quality, Enhance Cure

Sodium erythorbate (C₆H₇NaO₆) is a food additive that is used predominantly in meats, poultry, and soft drinks. Chemically, it is the sodium salt of erythorbic acid (the same as ascorbic acid or vitamin C) and it is used in processed meats primarily to facilitate faster curing by increasing the rate at which nitrite reduces to nitric oxide. Structurally related to vitamin C, sodium erythorbate helps improve flavor stability and prevents the formation of carcinogenic nitrosamines.

The use of erythorbic acid and sodium erythorbate as a food preservative has increased greatly since the U.S. Food and Drug Administration banned the use of sulfites as preservatives in foods intended to be eaten fresh (such as ingredients for fresh salads) and as food processors have responded to the fact that some people are allergic to sulfites. Occasionally it is used in beverages, baked goods, and potato salad.

Contrary to urban myth, sodium erythorbate is not made from ground up earthworms. Most likely, the rumor spread from the mispronunciation Middle English word *erthe*, which means "earth." Sodium erythorbate is produced from sugars derived from different sources, such as beets, sugar

cane, and corn and is a valuable antioxidant, because it readily reacts with oxygen and other oxidizing agents. Commercial grade sodium erythorbate is sold as non-reactive dry crystals. It has been used as antioxidants integrated directly into "active" packaging or other industrial uses, such as a metal corrosion inhibitor.

Depending on the type of process used to produce some meat products, sodium erythorbate may be required by regulation. All bacon that is pumped or massaged with curing ingredients, must also include 550 ppm of sodium ascorbate or sodium erythorbate (§ 424.22(b)(1) Pumped bacon).

There are a few methods of cooling heat treated meat products according to FSIS Compliance guidelines. A common method is cooling the meat from 130°F to 80°F within 5 hours to between 80°F and 45°F for more than 10 hours (15 hours total cooling time), but without fully product testing to determine the initial *clostridia perfringens* load, this option only applies to fully cooked meats with at least 100 ppm ingoing sodium nitrite and 250 ppm sodium erythorbate or ascorbate.

https://en.wikipedia.org/wiki/Sodium_erythorbate

<https://www.fsis.usda.gov/wps/portal/ffsis/home>

In Vitro Agriculture: Meat Alternatives

Advanced cultured tissue development research has been taking place since the mid-20th century, with meat production as a goal for the past 20 years. The research brings controversy and arguments without foreseeable conclusions.

French biologist Alexis Carrel successfully kept a piece of chick heart muscle alive in a petri dish, demonstrating the possibility of keeping muscle tissue alive outside of the body in 1921. Winston Churchill said in 1931, “We shall escape the absurdity of growing a whole chicken in order to eat the breast or wing, by growing these parts separately under a suitable medium.” The idea of actually generating meat tissue was really developed by the Willem Van Eelan, from the Netherlands, in the 1950’s, leading Willem to be called the “Godfather of Cultured Meat.” More work was conducted, and Russell Ross concluded that cells could be synthesized. In 1995, the Food and Drug Administration approved the use of commercial in-vitro meat production. Several patents involving tissue culturing and engineering have been filed since.

This precipitated a race to develop commercial scale production. As many as 30 laboratories have been doing cultured meat research and animal activist groups have offered a \$1 million prize to the

first to bring lab-grown chicken to market. The first cultured quarter pound burger cost over \$300,000 in 2013, but the cost is reported to have come down to just over \$11.00 per quarter pound since then, which is still 10 times higher than traditional ground beef.

What is cultured meat?

Cultured meat replicates engineering measures used in medical regeneration of organ tissue with three stages of production: selection of starter cells, treatment of growth medium, and scaffolding.

Starter cells can consist of embryonic or adult stem cells, which are capable of reproducing into other types of cells, such as organ tissue or muscle tissue, but engineering is required to increase replication speeds necessary for commercial production. Mysatellite cells and myoblasts do not change type of muscle or organ tissue, but they reproduce quickly enough for commercial production.

The culturing takes place on many types of mediums. Plant based, animal based, or genetically modified yeast based mediums will all impact types of flavor, aroma, and protein development. Fortification is also part of the research to customize the health benefits by manipulating certain

nutrients, such as omega-3 fatty acids.

The cells take shape by use of flexible edible structures called scaffold that is consumed with the cultured meat cells. They permit the creation of blood vessels for normal growth of tissue as well as aiding in the cell structure when making cultured boneless and ground meats. The production of cell-cultured meat currently necessitates the use of preservatives. Sodium benzoate controls yeasts and fungus. Collagen powder (the most plentiful protein in mammals), xanthan gum (a thickening agent), mannitol (a type of sugar alcohol), and cochineal (scarlet colored dye), are added for flavor and color.

The production of cell-cultured meat has its challenges. The facilities and bioreactors needed to combine the growth medium, nutrients and oxygen is very expensive. Regulators also need to define animal welfare concerns, since the initial cell collection comes from an animal. Some claim that as few as 10 cells could produce several thousand tons of cell-cultured meat, but there has not been enough research on allergen concerns with the growth medium, or added nutrients, or the long-term effects of consuming this type of protein vs. traditional proteins.

The labeling of cell-cultured proteins has been a lightning rod of contention. The cells come

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Rendering

A few years back the NDSU Department of Animal and Range Sciences conducted a survey of North Dakota meat plants. The survey found that 117 meat plants (custom-exempt, state-inspected, and federally-inspected) made a total of 16.35 million pounds of offal annually. Of that, 14.5 million pounds was renderable, because only beef, pork and bison offal is renderable. The non-renderable offal production was from elk, sheep and deer. North Dakota has no rendering companies and only a few provide service to ND, so the cost of offal disposal puts North Dakota meat plants at a slight competitive disadvantage. Nearly half of the offal from North Dakota producers is deposited in municipal or private landfills.

Rendering plants take in inedible products, such as offal, bones, blood, and dead stock and process them. Rendering is the process of converting waste animal tissue into stable value-added materials. The process dries the material and separates the fat from the bone and protein. Batch processing works like a large heated screw press, where the raw material is cooked to 250°-275° F and the fats and proteins are extruded out a percolator pan.

Continuous rendering processes dry the product by pre-heating the raw material, using a vacuum to draw the water out of the material. Continuous cookers typically produce a higher quality fat product. Blood is a separate

process. Less than 10% of the rendering plants in the U.S process whole animal blood. Dried blood meal is a valuable ingredient in animal feed because of its high lysine content.

Under regulatory control of the FDA, rendering facilities use careful consideration as to what type of rendering they do. Bovine spongiform encephalopathy (BSE) is a major concern for cattle slaughter plants and the same regulations apply to rendering plants. No specified risk materials (SRM's) of ruminant animals can go into the raw materials of a rendered product for ruminant animal feed. Non-ruminant animal waste materials are often used to make feed for ruminant animals.

Waste materials can be made into fuels, soaps, rubber, and plastic. The fat can be made into grease, soap, candles, and biodiesel. Tallow is often used as a lubricant for rolling industrial size sheets of steel. These, plus a host of other products come from rendering a waste material that would otherwise have been thrown into landfills or incinerated. Much of the bones, connective tissue, skin and hides not used for leather, is processed into gelatin. Gelatin is used for pill capsules, laboratory media, make-up, printing inks, glues and the food

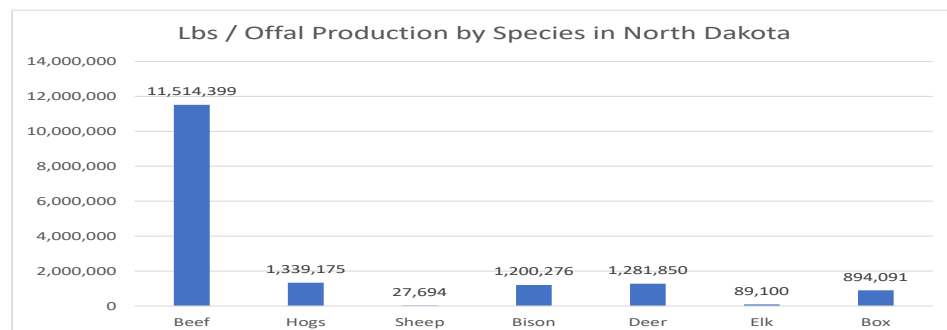
industry. Bone meal is often used as feed, but can also be used for pet food or used as an alternative to coal.

Rendering companies not only deal in slaughter house waste. Many also handle road kill, deceased zoo animals, unsold supermarket waste, restaurant cooking oils, and other manufacturing wastes. Rendering removes waste from the slaughter plants, creates a useful by-product, and decreases landfill need. Rendering is essentially a recycling process for organic tissues.

Meat Rendering Plants. 9.5.3 >>> Environmental Protection Agency. Retrieved 15:33, 10/09/2013 <http://www.epa.gov/ttn/chief/ap42/ch09/final/c9s05-3.pdf>

Rendering (animals). Wikipedia. com Retrieved 15:33, 10/09/2013 [http://en.wikipedia.org/wiki/Rendering_\(animals\)](http://en.wikipedia.org/wiki/Rendering_(animals))

Offal Disposal Methods in North Dakota Meat Processing Plants: Results from a survey of Meat Processors in North Dakota. North Dakota State University. Terry Rime, Walle Eide, Ken Odde, Travis Maddock, and Greg Lardy <https://www.ag.ndsu.edu/archive/carringt/livestock/Beef%20Report%2005/Offal%20Disposal%20Methods%20in%20North%20Dakota%20Meat%20Processing%20Plants.htm>



Regulation Reminder

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 4.1-31-24

Law Implemented:

NDCC 4.1-31-18



Table 9.5.3-1. Composition of Raw Materials for Inedible Rendering

Source	Tallow/Grease Wt %	Protein Solids Wt %	Moisture Wt %
Packing house offal^a and bone			
Steers	30-35	15-20	45-55
Cows	10-20	20-30	50-70
Calves	10-15	15-20	36-75
Sheep	25-30	20-25	45-55
Hogs	25-30	10-15	55-65
Poultry offal	10	25	65
Poultry feathers	none	33	67
Dead stock (whole animals)			
Cattle	12	25	63
Calves	10	22	68
Sheep	22	25	53
Hogs	30	28	42
Butcher shop fat and bone	31	32	37
Blood	None	16-18	82-84
Restaurant grease	65	10	25

^aWaste parts; especially the entrails and similar parts from butchered animal (EPA)

Smokehouse Maintenance

Attention given to specific areas of your smokehouse during routine cleaning can prevent costly repairs. Smokehouse temperature charts are also maintenance gauges. Changes in wet bulb and dry bulb temperatures, humidity levels, or probe or product temperature inconsistencies could be indicators something may be amiss with your smokehouse.

A few maintenance considerations:

- Good air flow is essential for proper oven pressure and safety.
- Clean exhaust pipes, and exterior and interior baffles.
- Cut, tore or hardened door seals can contribute to heat loss, smoke loss and air flow fluctuations.
- Smokehouses located near doors or windows could unfavorably affect operation.
- Smokehouses should be cleaned after every use.

Check your manufacturers recommendations on how often to clean certain areas like interior top baffles, water sprinklers, wet bulb reservoir and the heating element. Never allow accumulations of grease, smoke or product residues to build up.

Detailed records for sanitation and preventative maintenance schedules will help identify changes within a smokehouse.

Fluctuations often occur prior to hearing noises, vibrations or the smokehouse not starting and can help keep maintenance costs low and possibly aid in traceability of other food safety factors.

<https://www.meatpoultry.com/articles/19350-smokehouse-maintenance-matters>

<https://www.foodqualityandsafety.com/article/6-preventive-maintenance-practices-achieve-food-safety/>

NDMPIP Welcomes State Processing Plant

Jonny B's Brickhouse is the latest North Dakota company operating under the State Meat and Poultry Inspection Program.

Owned by Jon Beyer and business partner Thomas Schultz, Jonny B's first sold frozen pizzas from their restaurant in April 2017. They were granted inspection in June 2018 and started making about 100 pizzas per week. The official inspection helped them expand their product for resale at other establishments outside of their restaurant.

They quickly outgrew the capacity of the restaurant and opened a new production facility, capable of making about 4,000 pizzas per week. Their goal is to expand their sales into a 200-mile radius around Jamestown, getting a foothold in all major metro areas in that range and picking up small towns and bars throughout this area. Once they feel comfortable with that, they plan to expand outside of this market. Their campaign is "Making ND Pizza Great Again." They currently sell seven kinds of pizza with two others approved for sale and two more being developed and ready for resale in May 2019.

"We were extremely fortunate to have the help and guidance from the North Dakota Department of Agriculture to be able to get HACCP training and learn how to develop our own plant to be utilized for business," Schultz said. "We look forward to expanding with them through the Cooperative Interstate Shipment program."

For more information about Jonny B's Brickhouse, visit their website at <http://thejonnybrickhouse.com/> or their Facebook page at <https://www.facebook.com/brickhousejamestown>.



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.

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.

Meat Tumbler-500 lbs capacity: DFE Brand, without vacuum, completely stainless steel.

Smokehouses- 500 lbs capacity each. Call for information and details.

Globe Meat Slicer- functioning, but needs minor work. Call for information and details.

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.

Berkel 812 Automatic Slicer- New Blade, used little. \$2500 or best offer.

Budget ½ ton Chain Hoist- 3 Phase. \$700 or best offer.

Biro Patty Machine with cart- Model F3000N, foot control. Two sizes diameter drums. \$6500 or best offer.

Braising Kettle- Natural gas, needs work. \$500 or best offer.

Maple Valley Locker, Enderlin- Contact Dustin 701-437-3311 Please call for pictures or inquires.

Wanted- Next-to-New Band Saw- Please call Bruce at 701-254-4232, if you have a nice condition band saw to offer for sale.

Splitting Saw for Sale- Good condition carcass splitting saw available. Located in Great Bend. For more information call Steve Manock at 545-7513

Hobart Mixer-Grinder- ~200 lb capacity used mixer available in Mandan. Call Brian for more details at 701-663-0558

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from live animals but does that make the end product "meat"?

Technological advancements are a part of modern society, but there will always be arguments about providing food for future populations, while debating the impacts on health, environment, and ethics, especially related to the science of genetic modification, cell-culturing, agro-chemical

uses and other methods of food production.

A wise young woman once said to me, "When in doubt, look at history." She had recognized that everything comes full circle; everything has an impact. The decision is ours whether in vitro agriculture in this capacity is acceptable to us. The consumer will have the final say. But at this

point, the shelves at the food pantry probably won't be filling up with cultured "meat."

https://en.wikipedia.org/wiki/Cultured_meat#cite_note-24
http://europepmc.org/patents/PAT/WO9931222NCBI_PMC

US National Library of Medicine:
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3551074/>

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