Fermented & Dried Meat Products

Melanie Pollard
Food Compliance Officer
North Carolina Department of Agriculture & Consumer Services
Meat & Poultry Inspection Division
Classification of Processing Procedures:

- Shelf-stable, Ready to Eat (Dry Sausages)
- Heat-treated, Ready to Eat (Lunchmeats, hot dogs, etc.)
- Heat-treated, Not Ready to Eat (Bacon, cured side meats, country ham)
- Raw Ground (fresh sausages, ground meats and poultry)
Dried meat and poultry products can be classified as either fermented or non-fermented.

If they are fermented, generally they are dry and semi-dry sausages.

Semi-dried meats are simply dried to a different level (15% weight loss during drying, compared to 30% for dried products).

Non-fermented dried sausages are more commonly, jerky and dried whole muscle meats (such as dried ham), are also shelf-stable.
Types of Fermented Meat Products

- **Dry Sausage**
  - Pepperoni, Genoa Salami, Dry Salami, etc.
  - Lower temperature & longer process than for semi-dry
  - Shelf Stable due to water activity

- **Semi-dry Sausage**
  - Summer Sausage, Lebanon bologna, Cervelat, etc.
  - May require refrigeration
Fermentation Process for Dry Sausages

- A mixture of curing ingredients, such as salt and sodium nitrite, and a “starter” culture of lactic acid-bacteria, is mixed with chopped and ground meat, placed in casings, fermented and then dried by a carefully controlled, long, continuous air-drying process.

- The amount of acid produced during fermentation and the lack of moisture in the finished product after drying typically have been shown to cause pathogenic bacteria to die.
Processing of Semi-dry Sausages

- Usually heated in the smokehouse to fully cook the product and partially dry it.

- Are semi-soft sausages with good keeping qualities due to their lactic acid fermentation and sometimes heavy application of smoke.

- Some are mildly seasoned and some are quite spicy and strongly flavored.
Types of Non-Fermented Meat Products:

- Dried whole muscle meat (Country Ham)
- Jerky
- Dried Sausage
Process for Dried Meat Products:

- Curing (Climatic or Heat Treated)
- Smoked
- Drying
- Starter cultures not generally used
To produce a quality safe product it is necessary to:

- prevent the growth of **spoilage** bacteria

- prevent the growth of **dangerous** bacteria (E.coli 0157:H7, Salmonella, Listeria monocytogenes, Trichinella spiralis (trichinae), Staphylococcus aureus (staph))

- create favorable conditions for the growth of **beneficial** bacteria
To eliminate the risk of bacteria growth and to prevent meat spoilage we employ the following steps, also known as "hurdles":

- using meats with a low bacteria count
- curing - adding salt and sodium nitrite/nitrate
- lowering pH of the meat
- lowering Aw (water activity) by drying
- smoking
pH-Acidity

- Foods with a low pH value (high acidity) develop resistance against microbiological spoilage.

- Bacteria hate acidic foods and this fact plays an important role in the production and stabilization of fermented sausages.
Aw – Water Activity

- Water activity is an indication of how tightly water is “bound” inside of a product.

- It does not say how much water is there, but how much is available to support the growth of bacteria, yeasts or molds.
What type of Inspection is Required:

- USDA or State Inspection
- County Health Inspection
USDA or State Inspection Requirements:

- HACCP Plan
- SSOP
- Sampling for pathogens and Aw (Water Activity)
- Can wholesale products
How to Pursue USDA or State Inspection:

Contact the NCDA & CS, Meat & Poultry Division at 919-707-3180
### USDA Inspected Facilities That Process Fermented or Dried Meat Products for Farmers

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Address</th>
<th>Contact Details</th>
<th>County</th>
<th>Process Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acre Station Meat Farm</td>
<td>Richard Huettmann</td>
<td>17076 NC Highway 32</td>
<td>Pinetown, NC</td>
<td>Raw Ground, Raw Not Ground, Cooking, Curing (Bacon), Smoking (Country Ham)</td>
</tr>
<tr>
<td>Farm Brew</td>
<td>Sophie Bennewitz</td>
<td>6810 Caratoke Highway</td>
<td>Jarvisburg, NC</td>
<td>Cooking, Curing, and Smoking. Examples include but are not limited to: pastrami, roast beef, corned beef, hot dogs, brats, liverwurst, etc.</td>
</tr>
<tr>
<td>Lewis Sausage Company</td>
<td>Don Myers</td>
<td>1050 Old Savannah Road</td>
<td>Burgaw, NC</td>
<td>Raw Ground, Raw Not Ground, Cooking, Smoking (smoked sausage, C-loaf, Souse, Sliced Fatback &amp; Jowls, Pudding, Barbecue, Chitterlings)</td>
</tr>
</tbody>
</table>
# USDA Inspected Facilities That Process Fermented or Dried Meat Products for Farmers

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Address</th>
<th>Contact Information</th>
<th>Process Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac’s Farm Sausage Co.</td>
<td>209 Raleigh Road, Newton Grove, NC 28366</td>
<td>910-594-0095, 910-594-1812</td>
<td>Raw Ground (Pork Sausage and Semi-Dry Sausage)</td>
</tr>
<tr>
<td>San Guiseppe Salami Company</td>
<td>2172 Highway 87 North, Elon, NC 27244</td>
<td>336-586-7003</td>
<td>Raw Ground, Cooking, Curing, Drying, Smoking (Fresh sausages, Cooked sausages, Deli Meats, Salami)</td>
</tr>
</tbody>
</table>
Questions?