

Meat Inspection



This mark is the federal stamp that is put on meat carcasses. It is only stamped on the major cuts of the carcass, so it may not appear on the roast or steak you buy.



WHY DO WE NEED INSPECTION?

- About 90 diseases and parasites of animals can be transmitted to humans by consumption of improperly cooked meat.
- The Meat Inspection Act Of 1906** was passed to help prevent diseased meat from reaching consumers and to ensure that meat is processed and stored under sanitary conditions.



Meat Inspection

- The 1906 legislative act created **The Meat Inspection Service Of The USDA**. Today this agency is called the **Food Safety And Inspection Service (FSIS)**
- This federal inspection is required for all meat facilities involved in interstate commerce.
- Some states have state meat inspection services. Texas is one of these states.



SOME MEAT INSPECTION CHRONOLOGY

- 1906 - Meat inspection act passed
- 1926 - Voluntary poultry inspection for interstate and foreign commerce
- 1938 - On-the-farm slaughter and carcass transport to commercial plants was stopped
- 1957 - Poultry inspection was required for interstate commerce
- 1958 - Humane Slaughter Act required for animals where meat was sold to federal agencies



MORE CHRONOLOGY

- 1967 - Wholesome Meat Act; state inspection must equal federal (closed 1,204 TX plants)
- 1968 - Wholesome Poultry Act; intrastate commerce also covered
- 1978 - Humane Methods Of Slaughter Act; if inspected, must be humanely stunned
- 1980 - Total quality control introduced
- 1984-92 - Streamlined Inspection (ended after a slanted expose on TV)



STILL MORE CHRONOLOGY

- 1990 - HACCP; identify critical points and control them
- 1990 - Nutrition labeling and education act
- 1994 - Safe Food Handling Statement Required
- 1994 - Mandatory food labeling; FSIS required all retail meats to have nutritional labels



HUMANE SLAUGHTER ACT OF 1958

- This legislation was supported by animal activist groups.
 - It requires that animals must be unconscious before they are bled (Exsanguinated) to prevent pain.

- Approved stunning methods are:
 - Captive bolt stunner
 - Electric shock
 - Carbon dioxide gas
 - Works well but is difficult to use; Has been used with hogs
 - Gunshot
 - Dangerous



Ritual Slaughtering Such As For The Kosher And Halal Trades Is Exempt From The Humane Slaughter Act

- In Judaism, kosher means clean or fit to eat
 - (according to Hebrew law)

- Unblemished cattle or sheep (Kosher animals must have split hooves and chew the cud) are restrained with their throats exposed.

- A Shohet with a 14-inch, razor-sharp knife severs the carotid arteries and jugular veins behind the jaw with one pass of the knife.
 - When done properly, the animal loses consciousness in 3 seconds because of low blood pressure and feels little pain.

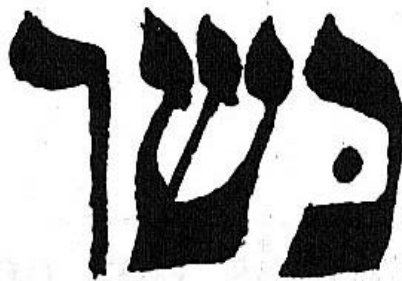


KOSHER MEAT IS MAINLY FOREQUARTERS

- Because Jewish people do not wish to consume blood (Leviticus 17:14), Kosher meat must be deveined and washed.
 - - Fore-quarters are closer to the heart and have larger blood vessels, making them easier to devein than hind quarters.
- Because only about half of the blood is drained during exsanguination, de-veining does not have the desired effect.
 - The remainder of the blood is trapped in capillaries, which do not empty easily.



STAMP FOR KOSHER MEAT



BASIC FUNCTIONS OF FEDERAL MEAT INSPECTION

1. Detection and destruction of diseased or contaminated meat
2. Assurance of clean and sanitary handling and preparation
3. Minimization of microbial contamination
4. Prevention of adulteration
5. Prevention of false labeling
6. Application of inspection stamps



INSPECTOR RESPONSIBILITIES

1. Facilities construction and operational sanitation
2. Assurance that all plants adopt HACCP
3. Assurance that SSOPs are practiced
4. Antemortem inspection
5. Postmortem inspection
6. Verification of HACCP system effectiveness



AREAS OF RESPONSIBILITY OF INSPECTORS

7. Oversight of protocols for *E. Coli/salmonella* testing
8. Product inspection
9. Laboratory determinations
10. Control and restriction of condemned products
11. Marking, labeling and inspection insignia



WHO PAYS FOR FEDERAL INSPECTION?

Federal inspection for a normal 8-hour shift (40-hour week)
-Taxes at work

For overtime, federal holidays or special services.
- Packaging or processing facility (increase costs)

We sometimes have to “Push” students at the meat lab to finish slaughtering on time so that we do not have to pay overtime charges for inspection



INSPECTION vs. GRADING

- Inspection refers to wholesomeness (Fit to Eat)
 - Also includes safety and accurate labeling
 - Important to consumer
- Grading refers to quality or yield of meat
 - Important to processor and producer
- Inspection is paid for by the government
 - except for overtime, etc.;
- Grading is paid for by the company using the service.
- Inspection is administered by the meat inspection branch Of FSIS
- Grading is administered by the standardization and grading branch of the livestock and seed division of FSIS.



Types of Inspectors

- Professional, Medical or Veterinary
 - Trained DVM's
- Non-Professional or Lay-persons
 - On-line inspectors
- Laboratory Personnel
 - Laboratory analysis



Facilities Concerns for Inspection Service

- Rail height
 - Beef carcass rail must be 10' 2" from floor
 - Prevents carcass from dragging
- Wall and floor materials
 - Must be nonporous and easily cleaned
- Exits and opening
 - Prevent insect contamination
- Lighting
 - Inspectors must be able to see product



Types of Inspection and Tags

- Antemortem Inspection – Before death
 - U.S. Suspect
 - Gets further inspection on kill floor
 - U.S. Condemned
 - Must be tanked
 - Or release for treatment



Types of Inspection and Tags

- Postmortem Inspection – After death
 - U.S. Inspected and Passed
 - Good for consumption as a raw product
 - U.S. Condemned
 - Whole carcass or parts are tanked
 - U.S. Retained
 - Railed off for more inspection
 - U.S. Passed for cooking
 - Re-inspect and if acceptable must be cooked prior to shipment



Types of Inspection and Tags

- Re-inspection
 - Any product at any time can be re-inspected
 - Safety net for strange occurrences



Inspection and Non-Meat Items

- Ingredients
 - All ingredients must pass inspection
 - Includes:
 - Spices
 - Casing
 - Cures
- Formulations
 - The amounts and kinds of anything must be approved by FSIS



The Need for HACCP

- Increasing number of new food pathogens
- Increasing public health concerns
- Size and diversity of food industry
- International trade



HACCP Defined

- Management system which food safety is addressed through the analysis and control of biological, chemical and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product



HACCP

- FSIS published the Pathogen Reduction and HACCP System Final Rule in July 1996.
 - Framework for future U.S. meat and poultry inspection
- 4 key provisions
 - Sanitations SOP's
 - Testing for generic *E. coli*
 - *Salmonella* performance standards
 - HACCP



Standard Operating Procedures (SOP's)

- Sanitation procedures the plant would conduct before and during operation to prevent direct product contamination or adulteration.
 - Wash tables
 - Equipment clean and sanitized
 - Floor free of food or debris



Testing for generic *E. coli*

- Good indicator of direct fecal contamination.
- Plants the testing & document the results (quantitative).

Slaughter Class	Acceptable Range	Marginal Range	Unacceptable Range
Cattle	Negative	<100 cfu/cm ²	> 100 cfu/cm ²
Poultry	≤100 cfu/ml	100 – 1000 cfu/ml	> 1000 cfu/ml
Swine	≤10 cfu/cm ²	10 – 10,000 cfu/cm ²	>10,000 cfu/cm ²



Salmonella Performance Standards

- Most common cause of foodborne illness associated with meat and poultry.
- Testing of raw carcasses and raw products, ground and/or comminuted product.
- Testing conducted and enforced by FSIS (present or absence of the organism).



Salmonella Performance Standards

Class	% Positive	# of samples	Max. # of Positives
Steers/heifers	1.0	82	1
Cows/bulls	2.7	58	2
Ground beef	7.5	53	5
Hogs	8.7	55	6
Broilers	20.0	51	12
Ground chicken	44.6	53	26
Ground turkey	49.9	53	29



HACCP

- Conduct a hazard analysis.
- Determine the critical control points (CCPs).
- Establish critical limits.
- Establish monitoring procedures.
- Establish corrective actions.
- Establish verification procedures.
- Establish record-keeping and documentation procedures.



HACCP Advantages

- Based on sound science.
- Focuses on identifying & preventing hazards from contaminating food.
- Places responsibility for ensuring food safety appropriately on the food manufacturer or distributor.
- Helps food companies compete more effectively in the world market .



HACCP Advantages

- Permits more efficient and effective government oversight.
 - primarily because the record keeping allows investigators to see how well a firm is complying with food safety laws over a period rather than how well it is doing on any given day



Federal Inspection Stamp for Red Meat Carcasses

- Round Shape
- Number is plant Code
- U.S. = Mean Federal
- Insp'd = Inspected
- P'S'D = Passed
- Is applied with an edible, purple dye



Federal Inspection Stamp for Boxes or Packages of Red Meats

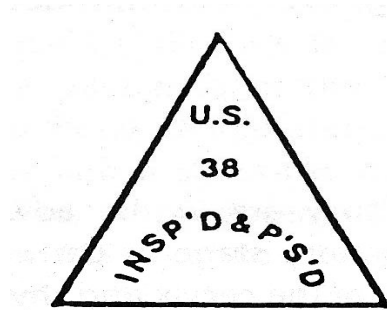


- Round Shape
 - Similar to red meat
 - Contains more info
 - Is provided to consumer
- Poultry plant code
 - Code begins with P
 - Poultry Identifier



Federal Inspection Stamp for Exotic Meats

- Triangular Shape
- Examples
 - Emu
 - Ostrich



Specs Program Meat Stamp

- Specification program is used by Institutional buyers
 - Allows for meat to be bought sight unseen.
 - Protection for consumer
- Shield shaped stamp



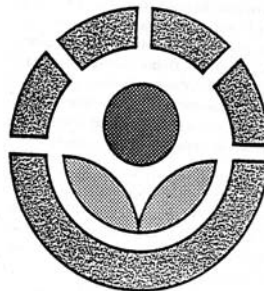
Texas State Inspection Stamp

- 15 states have state inspection.
 - Must meet federal inspection
- Can not sell interstate with state inspection



Irradiation Stamp

- Symbol and word appears on package
- Symbol is applied with green dye.



MEAT LAB LABEL

Accurate product name

Name and address of company

Inspection stamp

Official plant number

Net weight

Handling instructions

RAIDER
RED MEATS


BONELESS BEEF NY STRIP
STEAKS

TEXAS TECH UNIVERSITY
MEAT LABORATORY
LUBBOCK, TEXAS 79409

U.S. INSPECTED
AND PASSED BY
DEPARTMENT OF
AGRICULTURE
EST. 238

NET WT. _____

KEEP REFRIGERATED



Labels for Processed Meats

- For processed meats, Label must include ingredients
 - Example:
 - Pork, Water, Salt, Corn Syrup, Dextrose, Monosodium Glutamate, Natural Flavoring, BHA, Propyl Gallate, Citric Acid
- Ingredients must be listed in order of predeominanace



Names for Retail Cuts

- If meat for sale is packaged in establishments that are not under federal inspection, the name can be anything you like:
 - “Bubbas Redneck Bologna”



Special label claims

- Lean or Low Fat
 - < 10% fat (except ground beef)
 - Ground Beef is only beef
 - “Hamburger” Can contain more than one meat or substance
- Extra Lean
 - < 5% fat
 - Hamburger and ground beef can not have more than 22.5% fat and be labeled extra lean
- Lite, Light
 - At least a 25% reduction in calories



Other Label Claims

- Salt Free
 - “Free” means 5 mg or less sodium
- Extra
 - 10% more than USDA requirement
- Natural
 - No real rules, use caution when purchasing natural products
- Imitation
 - Resembles real product in appearance
- Irradiation



Nutritional Labels

- Know how to read a label
- What is the daily value?
- During next supermarket visit compare labels of similar products

Nutrition Facts	
Serving Size ¼ cup (114g)	
Servings Per Container 4	
Amount Per Serving	
Calories 260	Calories from Fat 120
	% Daily Value*
Total Fat 13g	20%
Saturated Fat 5g	25%
Cholesterol 30mg	10%
Sodium 660mg	28%
Total Carbohydrate 31g	11%
Sugars 5g	
Dietary Fiber 0g	0%
Protein 5g	



What is fat content of this product?

- Serving size = 114 g
- Total fat = 13 g
- $13/114 * 100 = 11.4\%$

Nutrition Facts	
Serving Size ½ cup (114g)	
Servings Per Container 4	
Amount Per Serving	
Calories 260	Calories from Fat 120
% Daily Value*	
Total Fat 13g	20%
Saturated Fat 5g	25%
Cholesterol 30mg	10%
Sodium 660mg	28%
Total Carbohydrate 31g	11%
Sugars 5g	
Dietary Fiber 0g	0%
Protein 5g	



Bottom Half of Label

- Daily value is recommended Daily Value (RDA)
- Figures based on:
 - Women = 2,000 calories/d
 - Men = 2,500 calories/d
- What is your average daily calori intake?

Vitamin A 4% • Vitamin C 2% • Calcium 15% • Iron 4%		
*Percents (%) of daily Value are based on a 2,000 calorie diet. Your Daily Values may vary higher or lower depending on your calorie needs:		
Nutrient	2,000 Calories	2,500 Calories
Total Fat	Less than 65g	80g
Sat Fat	Less than 20g	25g
Cholesterol	Less than 300mg	300mg
Sodium	Less than 2,400mg	2,400mg
Total		
Carbohydrate	300g	375g
Fiber	25g	30g
1g Fat=9 calories		
1g Carbohydrates=4 calories		
1g Protein=4 calories		



Why Have Inspection?

- Inspection personnel want meat to be safe
 - But may contain unseen pathogens
- Prevent food poisoning
- Assume meat is contaminated and handle properly



Follow to Prevent Disease

Safe Handling Instructions

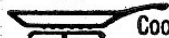
This product was prepared from inspected and passed meat and/or poultry. Some food products may contain bacteria that could cause illness if the product is mishandled or cooked improperly. For your protection, follow these safe handling instructions.



Keep refrigerated or frozen.
Thaw in refrigerator or microwave.



Keep raw meat and poultry separate from other foods.
Wash working surfaces (including cutting boards),
utensils, and hands after touching raw meat or poultry



Cook thoroughly.



Keep hot foods hot. Refrigerate leftovers
immediately or discard.

