Ready-to-Eat/Shelf Stable Products Process Familiarization

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FSIS Directive 5300.1 – identifies the HACCP categories that can include RTE products (Fully Cooked- Not Shelf Stable, Products with Secondary Inhibitors- Not Shelf Stable, Heat Treated – Shelf Stable, Heat Treated – Shelf Stable, Not Heat Treated – Shelf Stable).

Fully Cooked-Not Shelf Stable

This category applies to establishments that further process products by using a full lethality heat processing step (cooking) to achieve food safety.

Examples:		
	Fully cooked hams	Hot dogs
	Meat loaves	Cooked beef
	Meat and poultry salads	Roast Beef
	Sliced luncheon meat	Pastrami
	Poultry rolls	Corned Beef

The finished products are not shelf stable and must be frozen or refrigerated for food safety purposes. These products also **meet the definition of Ready-to-Eat (RTE)** as defined in 9 CFR 430.1.

9 CFR 430.1 – a meat or poultry product that is in a form that is edible without additional preparation to achieve food safety and may receive additional preparation for palatability or aesthetic, epicurean, gastronomic, or culinary purposes.

RTE product - a meat or poultry product that is **in a form that is edible without additional preparation** to achieve food safety and may receive additional preparation for palatability or aesthetic, epicurean, gastronomic, or culinary purposes. RTE product is not required to bear safe handling instructions or other labeling that directs that the product must be cooked or otherwise treated for safety and can include frozen meat and poultry products.

The cooking step in these products kills the pathogens. However, there are other **biological hazards of concern** in some products as a result of the different process steps and procedures involved in the production of the finished products.

There is also a concern with some common chemical hazards, including allergens such as soy or milk byproducts which may be included as non-meat ingredients in some products. Chemical accelerants, acidifiers and antioxidants may also be used as part of

the fermentation process or assist in the quality of some products. These could pose hazards if not used in proper quantities.

Like non-intact raw products, metal contamination from equipment with small and moving parts could pose potential **physical hazards** as well.

Heat Treated-Shelf Stable

This category applies to establishments that further processing by using a heat treatment processing step as the primary means to achieve food safety, in combination with curing, drying, or fermenting processing steps. The finished products are shelf stable and are not required to be frozen or refrigerated for food safety purposes.

Shelf Stable products -> free of microorganisms (pathogens and spoilage) capable of growing in the product at non-refrigerated conditions at which the product is intended to be held during distribution and storage. Shelf-stability is primarily achieved through drying or low water activity (aw).

Examples:	Meat Snacks/Jerky	Popped pork skins
	Sliced whole muscle beef jerky	Bacon Bits
	Beef nuggets	Snack sticks
	Steak tenders	Summer sausage
	Lebanon bologna	Thuringer

* Heat treated = cooked for lethality

* Dried for Shelf Stable (No refrigeration necessary)

Potential **biological hazards** include *Listeria monocytogenes*, which may contaminate the product after lethality.

Common **chemical hazards** include allergens, such as soy or milk byproducts which may be used as ingredients. Chemical accelerants, acidifiers and antioxidants may be used as part of the fermentation process or assist in the quality. These could pose hazardous if not used in proper measurements.

There are no notable physical hazards unique to this process category. However, like non- intact raw products, metal contamination from equipment with small and moving parts could pose potential **physical hazards** as well.

Not Heat Treated-Shelf Stable

This process category applies to products that are further processed by a curing, drying, or fermenting step as the sole means by which product achieves food safety. A low-level heat treatment may be applied if the heat treatment is not used as the sole means to achieve food safety. The finished products produced are shelf stable.

Examples: Dried sausage, such as Salami and Pepperoni

Dried whole muscle products

Dried hams, such as Prosciutto, Parma, and Country Ham

Dried pork bellies (Pancetta)

Dried pork shoulders (Copa)

Dried beef rounds (Bresaola, Beef Prosciutto, Basturma)

Cure – Salt lowers the water activity (makes water unavailable to microbes)

Nitrite fixes the color of the product

Inhibits outgrowth of spores (Clostridia)

NOTE: Nitrate or Nitrite = restricted ingredients

Proper usage and amounts are specified in the CFR

Formulations must be carefully controlled to be effective and prevent toxicity.

Biological hazards which are common to these products differ from raw products. The lethality step(s) in these products kills the pathogens (e.g., *Salmonella*, *Campylobacter, Listeria monocytogenes,* and *E. coli* O157:H7) which may otherwise be present in the raw materials. However, there are other biological hazards of concern as a result of the different ingredients and process steps these products may undergo.

Listeria monocytogenes (*Lm*) is also a potential biological hazard that may re-contaminate the product. This could happen after lethality if products are exposed to food contact surfaces, raw products, or contaminated ingredients prior to final packaging.

Common chemical hazards include allergens, such as soy or milk byproducts which may be used as ingredients. Lactic acid or acetic acid may be used to speed acid

formation. Nitrites are commonly used as part of the curing process and phosphates might also be used for binding, flavor and/or color.

Like non-intact raw products, metal contamination from equipment with small and moving parts could pose potential physical hazards as well.

Amenable Fish Species

Section 601(w)(2) was added to the FMIA and specified all fish of the order *Siluriformes* as amenable species under the act. FSIS has regulatory jurisdiction over all fish of the order *Siluriformes* produced for human food.

The *Siluriformes* includes the family *Ictaluridae* (e.g., Channel Catfish and Blue Catfish) (historically grown in the United States) as well as other catfish-like fish species (historically imported). Common names for some of these other catfish-like species are Basa, Tra, and Swai.

Organisms are classified according to the following hierarchy: Domain, Kingdom, Phylum, Class, Order, Family, Genus, and Species.

- *Siluriformes* is an order of bony fish that includes all catfish and catfish-like species.
- The name catfish refers to the long barbels, or feelers, which are present about the mouth of the fish and resemble cat whiskers.
- The Order *Siluriformes* comprises nearly 2,900 species in about 35 Families.
- Several species within the families *Ictaluridae*, *Pangasiidae*, and *Clariidae* are important food fish.
- Products labelled as “catfish” must be of the family *Ictaluridae*. Other species may only be labeled by their common or usual name. All these fish are desirable food fish.
- Once a fish has been de-headed, eviscerated, and skinned or filleted, it is difficult to accurately distinguish one family or species from another on visual exam. The agency has genetic-based species testing for that purpose.