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Safety Zone

Pasteurization for Meat and Poultry Products – Part I

(The views and opinions expressed in this blog are strictly those of the author.)

Yesterday, the North American Meat Processors Association (NAMP) petitioned USDA-FSIS to allow the term "Pasteurized" to be used for labeling qualified meat and poultry products.

This raises questions about what is pasteurization for non-liquid foods, how is it possible to achieve in raw and cooked meat products and why is it a good idea? In this part one of a two part blog, I will attempt to answer the first questions – what is it and how it can be done.

Since the French scientist, Louis Pasteur invented the process in 1862; pasteurization has been applied mainly to liquid food products, including milk, beer and juice. Until fairly recently, the sole method of treatment was heat pasteurization. Liquid foods products were heat treated to eliminate vegetative pathogens. Since some bacteria survive the pasteurization process, milk will spoil after pasteurization and still requires refrigeration. The idea behind pasteurization is not to sterilize a food, but to eliminate the risk of most pathogenic bacteria. Today, many other food products are pasteurized, including crab meat, shell fish and eggs.

Pasteurization of raw and cooked meat products is possible because of advances in antimicrobial and packaging technologies. For example, ham, turkey breasts and roast beef can be either cooked in the bag or cooked and then reheated in consumer packages to eliminate post-processing contaminants. These products are pasteurized as surely as pasteurized milk.

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Another important technology that has emerged is High Pressure Processing (HPP). This technology is capable of pasteurizing a wide variety of food products, including both raw and cooked meat and poultry products. HPP is widely used to eliminate post-processing contaminants on sliced RTE products. It is as effective as cooking and has been well received by consumers.

In theory, even food animal carcasses can be pasteurized. Since contamination works its way from the outside of carcasses, it should be possible to eliminate contamination on carcass surfaces through the application of heat and other anti-microbial treatments.

NAMP's petition asked FSIS to define the term "Pasteurization" as it would apply to meat products and to allow the term "Pasteurized" for consumer labels (In the interest of full disclosure, as Senior Scientific Advisor for NAMP, I helped draft and was a co-signer of the petition). The petition also asked the agency to establish performance standards for carcasses, raw meat and poultry products and RTE products.

In 2008, the National Advisory Committee on Microbiological Criteria for Foods (NACMCF) published a paper on pasteurization of foods and defined the term as:

"Any process, treatment, or combination thereof that is applied to food to reduce the most resistant microorganism(s) of public health significance to a level that is not likely to present a public health risk under normal conditions of distribution and storage."

The paper also identifies additional technologies that can be applied to various food products which accomplish the microbial reductions required to meet the definition of pasteurization. These include: Cooking, High Pressure Processing, Ultra Violet Energy, Steam and Hot Water Treatments, Microwave Processing, Irradiation, Pulsed Electric Fields, Chemical Treatments, Pulsed Light, Infrared Processing, Ultrasound, Filtration and Oscillating Magnetic Fields.

NAMP's petition does not apply to foods treated with irradiation. Regulations on irradiation and labeling requirements for irradiated meat and poultry products are already in place. Moreover, irradiation is classified as a food additive and when used to treat meat and poultry products, it is almost always applied at sub-pasteurization doses.

Assuming USDA acts favorably on NAMP's petition, the meat industry will soon be moving into the era of pasteurization. This is an historic first step that sets the stage for progress and growth throughout the industry.

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