

DEVELOPMENT OF A SAFETY MONITORING AND ASSURANCE SYSTEM (SMAS) FOR THE MANAGEMENT OF THE FOOD CHILL CHAIN

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ABSTRACT

The weakest link that affects directly safety and quality of chilled products is the actual chill chain. Meat products, unless processed, packaged, distributed and stored appropriately can spoil in relatively short time and when temperature abused pause a potential hazard for the consumer. Application of an optimised quality and safety assurance system for chilled distribution of fresh meat and meat products requires continuous monitoring and control of storage conditions from production to consumption. The principles of a novel chill chain management policy, coded “Safety Monitoring and Assurance System” (SMAS) are based on product’s time-temperature history, with the use of Time-Temperature Integrators (TTI), variation in product’s characteristics, and the use of predictive models for the growth of food pathogens, allowing to give priority to products in such a way that risk at consumption time is minimized and quality optimized. SMAS compared to the First In First Out (FIFO) current approach, can lead to significant reduction of the risk for unsafe products and improve quality at the consumption time.

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Keywords: SMAS, Distribution management system, Time-Temperature Integrators, Food safety, Shelf life