5 Quality assurance of MAP products

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5.1 Introduction

The assurance of safety and quality of MAP foods presents many special challenges to both the food technologist and the quality professional. In the preparation of these foods, both safety and quality issues must be addressed. Concerns to be addressed include raw materials and ingredients, packaging materials, the manufacturing and packaging processes, finished package evaluation, post-production storage and distribution and, finally, maintenance of these safety and quality attributes until consumption of the MAP product.

MAP products are able to meet consumers’ multi-faceted demands for safe, fresh or fresh-looking nutritious products, conveniently packaged in terms of both package size and package form, and at an affordable cost. As more MAP foods become available, there is a tremendous requirement on quality assurance (QA) of MAP to satisfy consistently these consumer expectations.

The variety and range of foods now available as MAP products make it difficult, if not impossible, to take a commodity approach to safety and quality of MAP foods. MAP foods include meats, poultry, fish, entrées, pasta, baked goods, fresh produce, egg products and sandwiches. These items may be in the raw, partially cooked or fully cooked state. The emergence of sous-vide products from processes involving only minimal thermal processing is viewed as an area of MAP in which safety and quality relationships are critical. Daniels (1991) describes these ‘new refrigerated foods’ as having the desired quality and convenience attributes but with high ‘fragility’. Because of the wide range of MAP products, a principles approach is the most logical method for describing the application of current concepts and procedures to ensure the safety and quality of MAP foods. Traditional, but still extremely important, areas of testing and analysis, and methodologies associated with routine quality control and inspection, will be presented only briefly.

5.2 Safety and quality of MAP foods

Manufacturers of MAP foods, like all other processed foods, have both the legal and the moral obligation to ensure that their products do not present
a public health risk to the consumer. Monitoring programs of government regulatory agencies are designed specifically to determine compliance with regulations dealing with this public health aspect. In addition, MAP foods that have presented a safety hazard in the past can expect to generate little confidence in the consumer. At the same time, food manufacturers recognize that quality characteristics of food (e.g. flavour, texture, color, nutritional value, etc.), are major factors that affect customers' expectations and, consequently, purchasing decisions. These desirable quality characteristics can serve to reinforce consumer loyalty and confidence in certain brand names.

It is clear that by their very nature MAP foods represent a category of products in which both safety and quality are of crucial concern. In response to a recent survey of large food processors, microbiological concerns as potential food hazards ranked at the top (Swintek, 1991). Surveys of consumers have shown consistently over the years (Penner and Kramer, 1985; Wolf, 1992) that microbiological problems associated with food spoilage are a major concern. In the USA, it has been established (Titus and Talbot, 1991) that microbiological safety of foods continues to be a perennial concern among federal regulatory agencies; and new packaging and processing technologies are cited to be among the emerging issues relating to food safety and food quality. Wolf (1992) singles out 'the use of improved films and trays with controlled or modified atmosphere conditions for fresh or minimally processed food' as an important and new food safety issue. The increasing appearances of refrigerated, increased shelf-life MAP foods are cited as examples that directly relate to food safety issues.

The above evidence points to the tremendous concern firstly for the safety assurance and, secondly, for the quality assurance of MAP foods. It is also clear, on the basis of contemporary safety assurance and quality assurance philosophies, that traditional screening or inspection approaches for food safety and quality will not suffice to guarantee that MAP foods will meet the safety and quality requirements. The current hazard analysis and critical control point (HACCP) approach is seen as the desirable and appropriate means for addressing food safety, while a comprehensive and integrated total quality approach is seen as the means to achieve product quality. A detailed treatment of the application of these two approaches is provided in the following sections.

5.3 Application of HACCP to MAP foods

Much has been written and said concerning HACCP and its potential for use in food safety assurance programs since the mid-1970s. Following its initial use by the Pillsbury Company, the point has now been reached.