HACCP IMPLEMENTATION IN THE CANADIAN MEAT INDUSTRY: HOW FAR, HOW FAST, HOW EFFECTIVE?

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Summary

This article will provide insight to what the current status of HACCP development and implementation is in the Canadian meat industry and what lies ahead. The focus will be to examine some of the key drivers for HACCP adoption, barriers to implementation, and industry needs to develop effective HACCP systems as part of its global recognition for safe food production.

Introduction

Having a well-designed food safety program is a responsibility of anyone that produces or distributes food. Many food processors already know that not producing safe, high quality food products can lead to serious food-borne illnesses, legal actions, and loss of business resulting from the negative publicity.

In developing food safety systems, the Hazard Analysis Critical Control Point (HACCP) system and its underlying principles is internationally recognized as being one of the best approaches. Emphasis is placed on anticipating and identifying biological, chemical, and physical hazards associated with ingredients or processing steps and to ensure procedures are taken during food manufacture to eliminate or minimize the hazards to an appropriate level. By monitoring the process and carrying out corrective actions to ensure critical limits are met, confidence in the safety of foods can be established without relying solely on end product testing. Using only end product testing to ensure food safety may result in undetected hazards due to the asymmetric distribution of hazards in the product.

The Canadian Food Inspection Agency's (CFIA) Food Safety Enhancement Program (FSEP) was designed to assist processors in adopting HACCP. In developing a HACCP system, federally registered establishments need to develop Prerequisite Programs (Good Manufacturing Practices), which form the foundation of the system, before developing HACCP plans. For both Prerequisite Programs and HACCP plans, written procedures are developed and implemented for direct and indirectly related food safety activities. Pertinent meat regulations must be included in developing these procedures and appropriate records kept to support monitoring activities. Federally registered establishments can then apply for a CFIA review team to audit their HACCP system to ensure it is complete and effective at addressing potential food safety hazards. If the written requirements are met and on-site observations and records indicate conformance to these procedures, HACCP recognition status can be granted. The result is a shift from traditional inspection to audits by CFIA at specified frequencies as determined by the risk classification of the products being produced.

Present status of HACCP

In Canada, it is not currently a requirement for meat processors to have a HACCP system in place. As a result, our industry has been slow to develop and implement HACCP because of the time, knowledge, and resource commitment involved. Those who choose to implement HACCP often do so for access to export markets with mandatory HACCP requirements (e.g. US) and to meet customer requests. Regardless of the reasons, processors have begun to realize that achieving HACCP recognition status can provide confidence in the safety of their products, more consistent quality, and enhanced operational efficiency.

Because we trade extensively with the US, the "Pathogen Reduction and HACCP" rule that mandated the implementation of HACCP systems at all US meat and poultry plants has impacted greatly on our industry. To continue exporting to the US, Canadian meat facilities needed to have achieved HACCP recognition status or at least fulfilled requirements set out in a compliance checklist by the same target dates as their US counterparts. Implementation dates were dependent on the number of employees in the establishment. Large plants (500 or more employees) needed to have a HACCP system in place by January 26, 1998, small plants (10 - 499 employees) by January 25, 1999, and for very small establishments (less than 10 employees or annual sales of less than $2.5 million) by January 25, 2000. This was in addition to requirements for sanitation standard operating procedures to be in place and achievement of performance standards for both generic *E. coli* and *Salmonella*.

Barriers to HACCP adoption

Achieving HACCP recognition status has been a challenge for most of our industry and continues to be as our very small processors face the January 2000 deadline. They are faced with barriers that are common to the industry and are not necessarily dependent upon size of the organization. These include a lack of time, finances, human resources, technical understanding, effective training materials and corporate commitment.

A common mistake is to develop a "theoretical" HACCP system that is not based upon input and coordination from other individuals in the organization. As a result, the program written in isolation is technically complete, but may not work in practice. Retraining of staff to carry out "new" ways of doing things should only be done where it will result in gains to safety of the products or it may cause confusion and result in lack of buy-in. Finding the time for program development with existing staff can be a challenge, and therefore, a dedicated HACCP coordinator is ideal. However, sorting through the wealth of HACCP information available to know what is required for development and what resources (e.g. computer software, manuals, databases, literature, etc.) will be most beneficial can also be time consuming for the coordinator. In developing the program, the key is to write what you do, to ensure you do what you write, and to ensure activities can be proven with records.

Prerequisite Programs are the initial step in developing a HACCP system, but they often require the most time and technical

knowledge. Some Prerequisite Programs will also be of more importance than others. For example, training of workers who are responsible for monitoring of critical control points may require experience in training adult learners or conveying of ideas to a multi-cultural workforce with language barriers. The resource package, *Frontline HACCP: Training Materials for Production Workers*, was developed by the Alberta Food Processors Association in conjunction with the Alberta Vocational College (Edmonton) to help with training of staff with limited English skills by using highly visual information and limited text.

Much of the HACCP information available is generic in nature and requires technical expertise to tailor it to meet specifics of the operation, product, equipment, and people. External consultants are an option, but finding affordable individuals with experience in the food industry, knowledge of the requirements for HACCP recognition, and an understanding of the science to perform a hazard analysis and meat regulations can be a challenge. A recommendation would be to work closely with the consultant to provide input about what may or may not be operationally feasible to ensure that the HACCP system developed will be fully integrated, understood and maintained by plant personnel.

Are we "doing things right" and "doing the right things?"

The HACCP system developed should be based upon sound science. However, it can be difficult to keep the system up to date since information on health hazards, their origin, and control continues to evolve. If we focus on the wrong things in conducting our hazard analysis, the HACCP system can fail. It must be recognized that some generic HACCP models have been developed on assumptions that have not been proven in practical settings. For example, Gill (1999) reported that there is little correlation between visible contamination of carcasses and microbial contamination, making a zero-tolerance for visible fecal matter as a control measure for reducing bacterial pathogens on carcasses ineffective. Furthermore, small quantities of bacteria can persist in obscured parts of large pieces of breaking equipment that can lead to subsequent contamination of many carcasses emerging from this process. Therefore, it is evident that a sound HACCP system needs to ensure monitoring activities and sanitation protocols re effective and have been verified by microbiological data.

In past years, intensive efforts have been focused on *E. coli* O157:H7 and *Salmonella* as pathogens of concern, but recent recalls have been directed towards the presence of *Listeria*. Recommendations have been made for the industry on how to control this organism (Tompkin *et.* al., 1999). However, industry, consumers, and government policy makers need to understand that on occasion, hazards may at best be minimized, but not eliminated, even if a HACCP system is in place. Our industry and the decision-makers need to be willing to use food contamination issues to instrument change. Demonstrating due diligence and having HACCP will not be

enough to prevent legal actions and loss of consumer confidence. Accountability for the foods we make is important, but improvements need to be made to communicate to the media and to consumers about their roles in food safety and the industry safety precautions that are already in place.

With increased free trade, policies that govern our industry will continue to be influenced by standards and practices being followed in other countries. However, decisions should still be based upon sound science. Unfortunately, gaps continue to exist between research findings, implementing these in our industry and making amendments to regulations that are acceptable to our trading partners. Furthermore, with the shift from inspection to an audit system, CFIA must ensure that the HACCP recognition process is kept uniform which may require further technical training of inspection staff and the audit teams reviewing the HACCP systems.

What might the future of HACCP look like?

As we face the new millennium, only a very small proportion of our meat industry has currently achieved HACCP recognition status. Factors include limitations in manpower of CFIA to review all the programs, revisions required in programs due to their inability to address potential hazards or to provide supporting documentation, and because not all of our industry has a requirement to do so. However, CFIA has proposed to have HACCP recognition in all federally registered establishments by January, 2001.

HACCP may be mandated at some point in the future because of our close alliance to the US and to support the image of safe food production to domestic and international customers. FSEP will likely be the bench mark for mandatory HACCP for several reasons. Resources have been committed into developing the manuals and tools to support the program, regulatory staff have received technical training, industry has been encouraged to adopt FSEP and discussions have taken place to ensure that the program is recognized as equivalent with our trading partners.

Attention must also be given to provincially-inspected meat processors to ensure they too are following Good Manufacturing Practices (GMP's) and industry standards. Although they are not required to follow FSEP, a food safety crisis that originates from any processor can impact the meat industry as a whole. Work is currently in progress in Alberta for assessing both the knowledge and practices of provincial processors regarding GMP's, and to ensure facility standards are met by January 1, 2002.

Despite all our efforts, HACCP will not be the "magic bullet". Food borne illness outbreaks can still occur due to incorrect assumptions being made for hazard analyses and the evolution of what we know are hazards. It is now generally accepted that safe food production does not begin nor end at the processor level. A "farm-to-fork"

approach to food safety that utilizes HACCP principles for defining Good Production Practices is now being developed for virtually all of Canada's commodities. This includes the "Quality Starts Here" program by the Canadian Cattleman's Association and the "Canadian Quality Assurance Program" by the Canadian Pork Council. More effort is also being expended into educating consumers about their role in safe food handling via the "Canadian Partnership for Consumer Food Safety Education" which models the "Fightbac" campaign of the US.

In conclusion, we have been fortunate to not have experienced a major food borne outbreak associated with meat in Canada. While it provides the industry with breathing room to develop its food safety system and a window of opportunity to take control of food safety issues without government imposition, there is a risk that our industry may become complacent. Being pro-active and developing a sound HACCP program will be one of the best tools for preparing our industry.

References:

Gill, C. O. 1999. HACCP by Guesswork or by the Numbers?. Food Quality January / February pp. 28-32.

Tomkin, R. B., V. N. Scott, D. T. Bernard, W. H. Sveum, and K. S. Gombas. 1999. Guidelines to Prevent Post-Processing Contamination from *Listeria monocytogenes*. Dairy Food Environ. Sanit. 19: 551-562.

CURRENT ACTIVITIES

Frances Natress, AAFC, Lacombe

The Third National Beef Science Seminar was held at the University of Alberta Campus and the Kinsella Research Station on August 20th and 21st. The theme of this year's seminar was "Molecular Biology in the Service of the Beef Industry". Speakers from Western Canada and Texas A & M University presented information on topics ranging from "Reproductive and Genetic Technologies" and "Molecular Aspects of Metabolic and Production Efficiency" to "Research Applications to the Cow-Calf Producer's Bottom Line".

The 20th Western Nutrition Conference was held on September 15th to 17th at Calgary. Speakers from the United States and Canada have addressed the theme of "Marketing to the 21st Century Consumer 99". Proceedings of this conference can be ordered for $25 a copy from Dept. of Agricultural, Food and Nutritional Science, 4-10 Agriculture/ Forestry Centre, University of Alberta, Edmonton, AB, T6G 2P5.

"Beyond 2000 – Challenges and Opportunities" is the theme of the annual Banff Pork Seminar to be held at the Banff Centre for Conferences from January 18th to 21st, 2000. The seminar is designed for participants who are interested in improving their knowledge and decision-making abilities in pork production. There will be presentations, breakout sessions and a poster session. More information about this conference should be available soon on their website: www.afns.ualberta.ca/bps.