The Current Status of HACCP Implementation

H.R. CROSS* and T.C. JACKSON*

The Hazard Analysis and Critical Control Point (HACCP) system has been widely endorsed by industry and regulators internationally as an effective, preventative approach to process control which assures the safest possible food supply. HACCP has been endorsed by the Codex Alimentarius Commission Committee on Food Hygiene and Committee on Meat Hygiene (Codex, 1993) and is currently being implemented in the European Union, Canada, Australia, New Zealand and the United States. In 1995, the USDA's Food Safety and Inspection Service (FSIS) issued a proposed HACCP and pathogen reduction regulation which would mandate HACCP for the U.S. meat and poultry industry (USDA, 1995). The Food and Drug Administration (FDA) has proposed mandatory HACCP for seafood products and is currently drafting a final rule (FDA, 1994a). The FDA has also issued a per-proposal requesting commentary on the implementation of mandatory HACCP for all regulated foods (FDA, 1994b). Many companies have already implemented HACCP because it is such an effective process-management tool. Other companies are considering HACCP programs in anticipation of mandates from federal regulators or in response to pressures from customers. As the HACCP concept moves to the forefront of the regulatory and industry food safety agenda, it is desirable to consider the current status of HACCP implementation in the food industry, and its related benefits and difficulties.

The International Meat and Poultry HACCP Alliance endeavored to obtain a snapshot of the current status of HACCP implementation in the meat and poultry industry. To this end, the Alliance sent questionnaires to various trade associations and to individual companies in June, 1995. The informal survey received 151 responses, primarily from companies in the U.S., which have helped to paint a picture of HACCP implementation and have reflected many of the concerns and misunderstandings in industry regarding the HACCP concept.

Questions contained in the questionnaire are included in Table 1. Responses to several of these questions are contained in Tables 2-4. This data has been categorized by company size, product category and commodity group. Of the 151 respondents, there was a greater response from larger companies (≥$50 million in sales/year; n = 72) than medium sized companies ($2.5-49.9 million in sales/year; n = 43), and small companies (≤$2.49 million in sales/year; n = 29). There was a less balanced distribution of company activity. One hundred thirty-three companies were involved in processing, 100 were involved in slaughter, and smaller numbers were involved in food service and retail (n = 46 and 46, respectively). Chicken (n = 94), pork (n = 72) and beef (n = 69) were the most frequent commodity groups represented, while lamb and turkey were also represented (n = 35 and 38, respectively). It is notable that many companies identified themselves with two or more commodity groups or company activities. For some questions, the sum of the percentages of total respondents answering "yes" and "no" does not equal 100%. This is a result of unclear responses or a lack of responses by some respondents to some of the questions included in the questionnaire.

Companies were asked whether or not they currently have HACCP plans in place for one or more of their operations. Over all, 49.7% of respondents currently have HACCP plans while 47.0% do not. The highest level of HACCP implementation was indicated by companies that had classified themselves as large. HACCP plans were implemented by 70.9% of these companies, while the opposite was true for medium and small companies, with levels of implementation of only 32.6% and 17.2%, respectively. This contrast was not demonstrated when company activity was considered, although companies involved in slaughter operations had the highest implementation rate (53.0%), and the degree of implementation for companies with retail activity was noticeably smaller. Of the commodity groups, the level of implementation for turkey, beef and chicken were similar (50.0%, 43.5%, and 54.3%, respectively). Implementation for pork was lower (38.9%), and lamb was the lowest, at 22.9%.

*H.R. Cross, Institute of Food Science and Engineering, Center for Food Safety, The Texas A&M University System, College Station, TX.

*T.C. Jackson, Institute of Food Science and Engineering, Center for Food Safety, The Texas A&M University System, College Station, TX.

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TABLE 1. Questions Included in the International Meat and Poultry HACCP Alliance Questionnaire.

Company Information:

Company activity (slaughter, processing, food service, retail, other).
Products involved (beef, pork, lamb, chicken, turkey, other).
Size of company (large [≥$50 million sales/year], medium [$2.5-49.9 million sales/year], small [≤$2.49 million sales/year]).

Implementation of HACCP:

1. Do you currently have HACCP plans in place for one or more of your company operations?
2. Do you feel that HACCP should be mandatory or voluntary? Why?
3. Do you require that your suppliers have HACCP programs in place? If so, what industry segments?
4. Does your company encourage your customers to implement HACCP programs?

If your company *is not* operating with HACCP plans:

5. Do you have plans to implement HACCP?
6. Will you develop HACCP plans for your company if the federal government does not mandate HACCP? If not, why not?
7. In what area of your operations do you intend to first implement HACCP plans?

If your company *is* operating with HACCP plans:

8. Please specify as to the number of plans for: (slaughter, processing, food service, retail-fresh, retail-deli/cooked).
9. How long have the above plans been in place?
10. How much time was required to put your first plan in place?
11. How often will/do you re-evaluate and modify your plan?
12. Do you have an employee on your payroll trained in HACCP? If yes, how many employees? How were they trained? If not, are you planning to hire a HACCP expert?
13. Is microbiological testing utilized in your HACCP program? If so, how is it used?
14. Why did your company implement HACCP?
    Haw HACCP improved your "bottom line"? Can you give some examples of how the "bottom line" has improved?
15. Your company uses HACCP to address what issues? (safety only, quality only, safety and quality)

Companies without current HACCP programs were asked if they intended to implement HACCP, and 52.1% responded that they would. A similar percentage of companies, 54.9%, responded that they intended to implement HACCP even if not mandated by the federal government. As with current HACCP implementation, company size was a major factor in future plans to implement HACCP. Of large companies without current HACCP programs, 90.5% had plans to implement HACCP. A slightly smaller proportion (85.7%) would implement HACCP even without a federal mandate. Of medium companies, 59.3% had plans to implement HACCP, while the same proportion would do so without a federal mandate. Only 8.7% of small companies without current HACCP programs had plans to implement HACCP, although a higher percentage, 21.7, responded that they would implement HACCP without a federal mandate. When grouped by associated commodity groups, a greater percentage of those utilizing chicken (65.0%) had plans to implement HACCP than the other commodity groups. The fact that many of the companies surveyed classified themselves into more than one commodity group or company activity would make it difficult to determine whether imple-

TABLE 2. Responses to International Meat and Poultry HACCP Alliance Survey. Implementation of HACCP and Opinions on Regulatory Status for Large, Medium and Small Companies.

Company size ($ million/year)	n	Current HACCP		Future HACCP[b]	Without mandate[bc]	Regulatory status		Supplier[ad]	Customer[ae]
		Yes[a]	No[a]			Mandatory[a]	Voluntary[a]		
Large (≥50)	79	70.9	26.6	90.5	85.7	36.7	58.2	17.7	49.4
Medium (2.5-49.9)	43	32.6	62.8	59.3	59.3	18.6	74.4	7.0	27.9
Small (≤2.49)	29	17.2	79.3	8.7	21.7	10.3	82.8	0.0	6.9
All Respondents	151	49.7	47.0	52.1	54.9	26.5	67.5	11.3	35.1

[a]*Percentage of responses for size category.*
[b]*Percentage of responses for size category without current HACCP programs.*
[c]*Will HACCP be implemented in the future without mandatory requirements by regulators?*
[d]*Are suppliers required to have HACCP programs in place?*
[e]*Does your company encourage your customers to implement HACCP?*

TABLE 3. Responses to International Meat and Poultry HACCP Alliance Survey. Implementation of HACCP and Opinions on Regulatory Status for Companies with Various Activities.

Company activity	n	Current HACCP		Future HACCP[b]	Without mandate[bc]	Regulatory status		Supplier[ad]	Customer[ae]
		Yes[a]	No[a]			Mandatory[a]	Voluntary[a]		
Slaughter	100	53.0	45.0	55.6	60.0	27.0	67.0	10.0	36.0
Processing	133	48.8	48.1	56.3	46.9	27.1	66.2	9.0	35.3
Food service	46	47.8	47.8	59.1	45.5	19.6	71.7	19.6	56.5
Retail	46	39.1	58.7	33.3	22.2	21.7	73.9	6.5	21.7
Other	6	33.3	66.7	0.0	50.0	16.7	83.3	16.7	16.7
All Respondents	151	49.7	47.0	52.1	54.9	26.5	67.5	11.3	35.1

[a]*Percentage of responses for company activity.*
[b]*Percentage of responses for company activity without current HACCP programs.*
[c]*Will HACCP be implemented in the future without mandatory requirements by regulators?*
[d]*Are suppliers required to have HACCP programs in place?*
[e]*Does your company encourage your customers to implement HACCP?*

mentation was influenced solely by the commodity group of products or company activity, or if other factors were involved.

Several respondents who would not implement HACCP if not mandated cited expense, a lack of manpower, a lack of HACCP-trained individuals, and the cost of training. Some suggested that HACCP was not necessary for their company and that their current system seemed to be effective.

Only 11.3% of surveyed companies require their suppliers to have HACCP plans in place; however, this level is higher for large companies (17.7%) than for medium (7.0%) or small companies (0.0%). A higher percentage of companies involved in food service required HACCP plans for their suppliers (19.6%) than for slaughter (10.0%), processing (9.0%) and retail (6.5%).

Only 35.1% of surveyed companies encourage their customers to utilize HACCP systems. Approximately half (49.4%) of large companies recommend HACCP for their customers, a considerably higher level than medium (27.9%) or small (6.9%) companies. Of companies with some food-service activities, 56.5% encouraged HACCP for their customers compared to 36.0% and 35.3% for slaughter and processing, respectively, and only 21.7% for retail.

As regulators embrace the HACCP philosophy, there has been some debate over whether the HACCP system should be mandated for industry or should be voluntary. The majority of companies surveyed (67.5%) felt that HACCP should be voluntary, while 26.5% felt that HACCP should be made mandatory. As with HACCP implementation, the size of the responding company had an effect on their response to this issue. A greater percentage of large companies suggested that HACCP should be mandatory than that of medium or small companies. Of large companies, 36.7% felt that HACCP should be mandatory, while 58.2% felt that it should be voluntary. In contrast, only 10.3% of small companies felt that HACCP should be mandatory, while 82.8% felt it

TABLE 4. Responses to International Meat and Poultry HACCP Alliance Survey. Implementation of HACCP and Opinions on Regulatory Status for Various Commodity Groups.

Commodity group	n	Current HACCP		Future HACCP[b]	Without mandate[bc]	Regulatory status		Supplier[ad]	Customer[ae]
		Yes[a]	No[a]			Mandatory[a]	Voluntary[a]		
Beef	69	43.5	53.6	37.8	35.1	21.7	72.5	14.5	36.2
Pork	72	38.9	58.3	35.7	33.3	19.4	75.0	12.5	30.6
Lamb	35	22.9	74.3	34.6	30.8	20.0	74.3	14.3	14.3
Chicken	94	54.3	42.6	65.0	60.0	27.7	66.0	12.8	38.3
Turkey	38	50.0	50.0	42.1	52.6	21.1	76.3	0.0	31.6
Other	29	55.2	44.8	53.8	43.8	27.5	72.4	13.8	37.9
All Respondents	151	49.7	47.0	52.1	54.9	26.5	67.5	11.3	35.1

[a]*Percentage of responses for commodity group.*
[b]*Percentage of responses for commodity group without current HACCP programs.*
[c]*Will HACCP be implemented in the future without mandatory requirements by regulators?*
[d]*Are suppliers required to have HACCP programs in place?*
[e]*Does your company encourage your customers to implement HACCP?*

should be voluntary. Of medium-size companies, only 18.6% indicated that HACCP should be mandatory, while 74.4% suggested voluntary HACCP. When evaluated by commodity group or company activity, opinions were consistent with the overall percentages.

Many who felt that HACCP should be voluntary suggested that the cost of HACCP would be too high. Some were concerned that small companies lack the financial or personnel resources to implement HACCP. One respondent asserted "if HACCP happens to plants our size, the first thing implemented would be a for-sale sign. But there would be no buyers. I am not trying to be difficult; it is just reality." Others suggested that HACCP regulation by the USDA is likely not realistic nor workable. Some indicated that the decision to require HACCP should be based upon a risk assessment of the product and process. Another suggestion was that HACCP should be voluntary, with any HACCP requirements made by customers in specifications. Several commented that mandatory HACCP is not necessary, since the owner is and should be ultimately responsible to the customer for product quality and safety.

Several who indicated that HACCP should be mandatory asserted that HACCP would not be implemented by companies unless it were enforced. One respondent noted "in order for the industry to implement HACCP, it will probably need to be mandated through regulatory agencies. We wish it could be voluntary through marketplace pressure, but realistically it won't." Another expressed concern that "consumers would have a false confidence in plants that claim to be HACCP but use a loose interpretation of the rules." Other reasons provided for mandatory HACCP were that it would allow the establishment of uniform codes throughout the food industry and that HACCP would "force the current inspection system that FSIS uses to be more scientific."

Companies currently having HACCP plans were asked how long their plans have been in place. In many cases, the length of time varied since plans for different products were implemented at different times. Generally, the length of time ranged from 1 month to 6 years. Some respondents reported longer times (for example, 40 or 42 years); however, it was apparent that these respondents equate the HACCP system to the current FSIS inspection program, or to the company's established quality and safety program.

The lengths of time reported for implementation of HACCP plans generally ranged from 6 weeks to 6 months, with several respondents reporting 1 to 2 years, and one reporting 40 hours. When asked how often HACCP plans were re-evaluated and modified, the most common responses were (in order of frequency): annually (25.0%), every three to six months (20.3%), variable (18.8%), daily (17.2%), quarterly (12.5%), greater than one year (4.7%) and monthly (1.6%).

Sixty-seven of the responding companies reported that they have a HACCP-trained individual on their payroll. In most cases, this would correspond to companies that currently have implemented HACCP plans; however, in a few instances companies reporting currently operating HACCP plans also reported having no HACCP-trained employees on their payroll. The number of HACCP-trained individuals reported was highly variable. Many reported 1 to 12 employees, while others reported higher numbers, with many or all of company employees trained in HACCP. Sources of employee training included industry association seminars, seminars by FDA or USDA, seminars sponsored by universities and in-house training.

Fifty-nine of the companies surveyed (79% of those with current HACCP plans) reported using microbiological testing in their HACCP program. Uses cited included the verification of sanitation, verification of raw materials and supplier programs, verification of critical control points, trend analysis, and in-process and finished-product analysis. One respondent asserted that his company's "current position is that most of our microbiological testing is for verification of our sanitation program and is for quality/shelf life, not for food safety. Sanitation is a prerequisite GMP and does ***not*** fall within HACCP plans."

Companies surveyed were asked whether their HACCP programs addressed issues of safety only, quality only or quality and safety. Of the 78 companies responding to this question, 47 (60.3%) used HACCP to address safety and quality, 20 (25.6%) to address safety only, and 11 (14.1%) to address quality only. One respondent noted that in the U.S., his company's HACCP plan addressed safety only; however, for certain operations in the U.K., safety and quality issues were addressed.

Several reasons were provided when companies were asked why they implemented HACCP programs. Many initiated HACCP programs to improve product safety and manage product quality. Some cited regulatory pressure or customer requirements. One company responded that, in addition to management of product safety, HACCP was implemented to "sell" the company to outside customers.

Sixty-two companies responded to the question of whether or not HACCP improved their "bottom line." Of them, 26 (41.9%) responded that it had, 27 (43.5%) responded that it had not, and 9 (14.5%) responded that they did not know. When asked to provide examples of how the "bottom line" had improved, the following were provided:

> Increased product shelf-life, improved product consistency, helps to maximize yield.
>
> Preventative programs reduce the amount of product reworked or rendered.
>
> The burden of product safety is shared among more employees.
>
> Critical control points are easier to monitor than extensive product testing.
>
> Ground beef spoilage claims reduced by $100,000 in one plant after implementing HACCP.
>
> Numerous customers chose us as a supplier because of our HACCP systems.

A larger number of foreign objects are found by employees on the line as a result of heightened awareness HACCP has brought.

By detecting deviations and bringing them to plant management's attention, we have been able to avoid shipping questionable product.

Amount of "rejected" product has been reduced.

Responses to this questionnaire have demonstrated some of the concerns, as well as some of the advantages, of HACCP implementation. The majority of surveyed companies has not yet implemented HACCP, and if regulators do indeed mandate HACCP, many of these companies will need the encouragement and technical support necessary to apply the system to their operations. It was apparent that some of the respondents to the questionnaire misunderstood what the HACCP system is. It is possible that many companies have not yet utilized HACCP because they do not understand the HACCP process and why it is valuable, regardless of the intentions of the regulatory community.

Many small companies have a realistic concern over the cost of HACCP implementation, training and maintenance in their operations. If HACCP is to be embraced and successfully implemented throughout the meat and poultry industry, the concerns and resource needs of small companies must be addressed. The future of HACCP implementation will depend upon effective communication between regulators, the food industry and the academic community.

REFERENCES

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