Food safety education and awareness: a model training programme for managers in the food industry

John Crowther*†, Teresa Herd† and Martin Michels‡

In the food manufacturing industry, education, training and awareness are just as important for senior executives and managers as for the foodhandlers themselves. A model seminar has therefore been devised to teach managers the basic principles of quality assurance in food manufacture and to motivate them. In essence this entails: (i) an understanding of the hazards (microbiological, chemical and physical) inherent in the entire process from the raw materials to the final food in use by the consumer; (ii) an understanding of how HACCP (hazard analysis critical control point) can be used to design safe products and processes in order to reduce or to eliminate those hazards; (iii) commitment of all staff to apply good manufacturing practices at all stages of the process; (iv) some mechanism to keep up to date with current issues in food safety. The seminar has a unique structure: it is built around the steps in an idealized factory process and thus it can be used to train managers from any kind of food processing operation anywhere in the world.

Keywords: Education, training, managers, HACCP, QA, GMP, TQM

INTRODUCTION

Hitherto, food hygiene education in the food industry, including the catering industry, has been targeted primarily at food handlers *per se*, with little emphasis given to the training of their managers. Even a cursory glance at lists of training materials will bear this out (e.g. Bates, 1987). Only latterly have texts appeared targeted specifically at management grade staff (Jacob, 1989; Harrigan and Park, 1991; Shapton and Shapton, 1991). However, analysis of some outbreaks of food contamination over the past decade, involving factory manufactured foods, reveals that the root causes were sometimes faulty management of the process and sometimes faulty handling of the food by foodhandlers (Bryan, 1974; Sockett, 1991). It follows that if such incidents are to be prevented in the future, thorough training of managers as well as foodhandlers should become a high priority. This paper describes a model programme which can be used to train operational managers in the basic concepts of quality assurance (QA). It is noteworthy that the term 'foodhandlers' as used in the UK Food Safety Act (Anon, 1990) embraces managers who may not be directly involved in the physical handling of food.

The Approach

It is now well established that if any education and training programme is to bring about any improvement in quality in an organization, it must be approached from the top down. This means that the senior executives must themselves be committed to the programme and all that may ensue, especially the costs of education and training and the costs of any identified

†Unilever Research, Colworth House, Sharnbrook, Bedfordshire, MK44 1LQ, UK. ‡Unilever Research, PO Box 114, 3130 AC, Vlaardingen, Netherlands. *To whom correspondence should be addressed

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improvements to the QA system. In the context of a food manufacturing organization, the main steps in this approach are to:

- convince and motivate senior executives including members of the board;
- motivate and train operational managers;
- motivate and train supervisors, foodhandlers and all other staff.

These different levels of personnel will have different requirements for education and training and these are outlined below.

Senior executives

This group of people are relatively easy to train because they need basic concepts only, especially:

- the basic principles of a QA system;
- the main hazards of the food products which the company markets;
- how these hazards can be controlled by use of the HACCP (hazard analysis critical control point) systems;
- the need to maintain high levels of commitment in all employees at all parts of the food handling and distribution process;
- an awareness of the current issues in food safety which are relevant to their business.

Experience shows that the best way to inform, influence and motivate senior executives is by short presentations, by short but well-targeted videos and by discussions.

Operational managers

These people are the most difficult group to train for two reasons. First, they are a diverse group since they include planning, development, buying, production, QA, distribution, sales and marketing managers. Second, they need to know far more detail on each topic than do senior executives or foodhandlers. Personnel managers should also be included because they must understand the breadth of skills which have to be recruited and retained.

Thus, in addition to the items listed above for senior executives and the items listed below for foodhandlers, managers need to know the following:

The Process. They must be fully aware of all the steps in the process of each product from purchase of raw materials through processing, packaging, distribution to the way the food is used by the consumer.

The Hazards. Managers must be aware of the hazards (chemical, physical and microbiological) which can threaten the safety and quality of the food at each stage of manufacture, distribution and use.

Prevention by HACCP and good manufacturing practices (GMPs). Managers must be aware of the QA systems which have to be in place to reduce or eliminate the relevant hazards. The essential step here is to follow the HACCP system to design products and processes that are safe. Another step is to implement good manufacturing practices (GMPs). The best known example is formed by the General Principles of Food Hygiene (Codex Alimentarius, 1988), a code which has proved most useful in setting hygiene standards around the world. An overview of many other existing GMPs is found in a UK IFST Guide (Anderson and Blanchfield, 1991). It is vital that managers are aware of the relevant codes of hygienic practice which have been written nationally or internationally.

Commitment. Managers must understand that commitment is a vital ingredient in any successful preventive system; unless managers themselves are committed and motivated, they cannot expect their workforce to be committed and motivated. This is a personnel issue, which is best addressed by the total quality management (TQM) philosophy. Accordingly, Unilever has devised a model seminar in order to train groups of food factory managers in the topics outlined above.

Model seminar

The seminar is an intensive training exercise which takes about 4 days. It uses many different learning formats such as presentations, syndicate work, videos, role-playing exercises and discussions, all designed to be as interactive as possible. The training is delivered by a group of experts from all the relevant disciplines which are listed in the figure. The seminar has a novel structure. It is built around the steps of an idealized factory operation, from the purchase of raw materials, through processing, packaging and distribution, to the way the food is intended to be used by the consumer.

Figure 1 shows these steps in a schematic way and can be used as a 'road map' throughout the seminar. The seminar starts by discussing the potential safety hazards which could cause harm to a consumer and which are

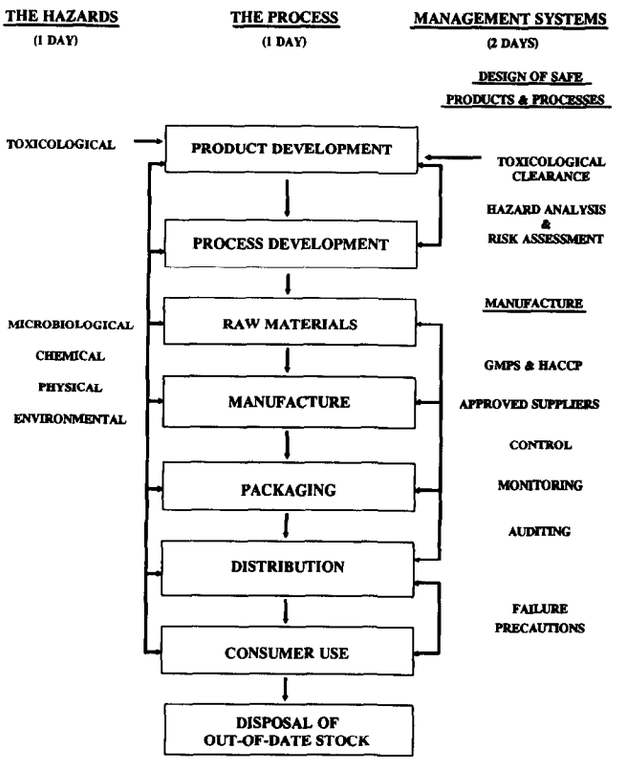

Figure 1 Outline of a model seminar for managers in the food industry

inherent in the process: toxicological, microbiological, chemical and physical hazards. These are listed on the left-hand side of the *Figure 1*. About one day is spent on these topics but it can be varied depending on the background knowledge of the participants and on the main safety issues which are currently threatening the industry.

The next part of the seminar explores the management systems which are required in order to reduce or eliminate the hazards. The topics are listed on the right-hand side of the *Figure 1*, and, typically, they require about two days for discussion. Great emphasis is put on the design of safe products and processes, and this in turn requires an understanding of HACCP (Mayes, 1992; Codex Alimentarius, 1991). Strong emphasis is also placed on safe manufacture of food, again with discussions on GMPs and HACCP.

In the true spirit of TQM and *Kaisan* (continuous improvement by small steady steps), these participants spend the last day exploring ways of improving their QA systems. This includes maintaining a dialogue with senior executives and revising training programmes for food handlers.

Experience has shown that seminars based on the 'road map' of *Figure 1* are very flexible and can be used to train groups of managers in any kind of food manufacturing operation anywhere in the world. The response from the participants has always been excellent, with the result that quality improvement programmes have been strengthened throughout the world.

Supervisors and foodhandlers

There are abundant training materials for these groups of people and they have been reviewed succinctly elsewhere (Bates, 1987; ICMSF, 1988). In summary, supervisors and foodhandlers need to know:

- the major sources of microorganisms in the product for which they are responsible;
- the role of microbes in disease and food spoilage;
- why good personal hygiene is required;
- the importance of reporting diarrhoea, vomiting, other illness, lesions and cuts to supervisory personnel;
- the nature of the control required at their job in the process;
- the proper procedures and frequency for cleaning equipment for which they are responsible;
- the procedures necessary to report deviations from control specifications;
- the characteristics of normal and abnormal product at their given step in the process (e.g. colour, texture, package integrity, odour);
- the importance of maintaining proper records;
- how to monitor critical control points (CCPs) of operations within their responsibility.

In addition, this group of people need to be committed to perform their jobs correctly. This can best be done by management example and by careful selection of training materials.

The training materials on food safety for this group of people should be relevant to the factory and to the population concerned. Ideally, factory managers should produce their own teaching materials in consultation with their QA and medical staff. The materials used could include videos, transparencies and posters. Individual videos are expensive to produce although they are useful for providing a common background, and a training package – either a video tape or notes – which could be illustrated and given colour and interest by locally produced slides, is a cost-effective approach. Informal and interactive training sessions are far more effective than classroom-style lectures. The material and approaches should be continuously updated. Posters should be selected to follow up and to reinforce the messages. The subject matter should include illustrations of the critical operations in the production, storage and distribution chains. Case histories of previous incidents of food contamination can make powerful teaching material, especially if the 'lessons learned' are teased out and understood.

Current awareness

All levels of staff, but especially executives and other managers, need to be kept up to date on current issues of food safety which may affect their business. Current awareness is therefore another vital component of an effective QA programme. Several current awareness bulletins are published on food safety, but most of them are targeted at the medical profession and most of them are 'reactive' in approach. However, one new publication which is preventive and is targeted at a wider readership, including factory managers, is *International Food Safety News* (Paterson, 1992).

CONCLUSION

In conclusion this paper outlines an education and training programme for all levels of staff in a food manufacturing operation. It emphasizes that managers are an essential, but difficult, group to train. It describes a model seminar which can be used to train groups of managers from any kind of food processing operation.

This paper also points out that the safety of factory manufactured foods depends on two key elements:

- an effective QA system based on a knowledge of hazards in the manufacturing chain – this is a technical and organizational issue;
- a high level of committment from everyone involved in the process from the company chairman downwards – this is a personnel issue; it necessitates training, not only of foodhandlers but also supervisors, managers, and senior executives.

Both these elements are essential; QA systems are worthless without the committment to apply them, and committment is worthless without a complete working knowledge of all the hazards in the company's operations.

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