

**London South Bank  
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**FACTORS CONSTRAINING THE IMPLEMENTATION  
OF HAZARD ANALYSIS IN SMALL AND MEDIUM  
SIZED FOOD BUSINESSES IN THE LONDON  
BOROUGH OF CAMDEN**

**By**

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## **ABSTRACT**

Regulation 4. (3) of the Food Safety (General Food Hygiene) Regulations 1995 introduced a HACCP based food safety management system known as hazard analysis into UK food safety legislation. During the period of the research the regulation was revoked and replaced by Article 5 of Regulation EU 853/ 2004 which introduced a similar but more stringent requirement. Such food safety management systems introduced descriptive legislation into food safety legislature and were a distinct departure from the long established command and control prescriptive legislation.

The research had three main purposes. The first was to assess the constraints that hindered the implementation of food safety management systems within small/ medium sized (SME) food businesses. The second was to identify the main motivator amongst food business operators (FBOs) for the implementation of food safety management systems within their food businesses. The third purpose was to determine an optimum compliance model, in terms of enforcement and support that the London Borough of Camden (LBC) as the food authority could introduce to maximise the uptake of HACCP based food safety management systems within SME food businesses of the study populations.

The research established that constraints existed that hindered the implementation of food safety management systems. The constraints reflected the general shortcomings amongst FBOs in relation to their capacity to understand HACCP based concepts and their unwillingness to implement a concept that they generally considered alien to them.

The research further established that the uptake and implementation of HACCP based food safety management systems was increased by the food authority providing practical assistance and support in the form of an Intervention Project. Such support focused on the implementation component of the food safety management system with the analysis component playing a subordinate role.

In a deregulatory climate where legislation is likely to be introduced which will result in the enforcement powers of food authorities being significantly curtailed. A cooperative educational approach by the food authority in the achievement of regulatory compliance will be an increasingly viable option as a tool to facilitate the implementation of HACCP based food safety management systems within SME food businesses.

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## LIST OF ABBREVIATIONS

ASC	Assured Safe Catering
BHA	British Hospitality Association
CCP	Critical Control Points
CIEH	Chartered Institute of Environmental Health
COI	Central Office of Information
COP	Code of Practice
CP	Control Point
DTI	Department of Trade and Industry
EU	European Union
EC	European Community
FAO	Food and Agriculture Organisation
FBO	Food Business Operator
FHRS	Food Hygiene Rating Scheme
FMEA	Failure Mode and Effect Analysis
FSA	Food Standards Agency
FSO	Food Safety Officer
GHP	Good Hygiene Practice
HACCP	Hazard Analysis and Critical Control Points
LACORS	Local Authorities Coordinators of Regulatory Services
LACOTS	Local Authorities Coordinating Body on Food and Trading Standards
LBC	London Borough of Camden
MAFF	Minister of Agriculture, Fisheries and Food
NASA	National Aeronautics and Space Agency
OECD	Organisation for Economic Co-operation and Development.
REG 4.(3)	Regulation 4. (3) Food Safety (General Food Hygiene) Regulations 1995
REHIS	Royal Environmental Health Institute of Scotland
S.A.F.E	Systematic Assessment of Food Environment
SLDBs	Small Less Developed Businesses

SMEs

Small and Medium Sized Enterprises

WHO

World Health Organisation

# **Chapter 1**

## **Introduction**

## CHAPTER 1

### 1.0 INTRODUCTION

*This chapter defines the terms hazard analysis and Hazard Analysis and Critical Control Points (HACCP) and examines the history from its inception in 1959 to its present day implementation in food businesses. It surveys the various forms of HACCP based food safety management systems available for use since 1995.*

*The regulatory development of HACCP based systems is discussed. This extends from the hazard analysis requirement of Regulation 4.(3) of the Food Safety (General Food Hygiene) Regulations 1995 [1995 No 1763] through to the legal obligation for food business operators (FBOs) to implement HACCP based food safety management systems under Article 5 of EC Regulation 825/2004 [ OJ L139, 30.4.2004, p.1].*

*Since 1995, the implementation of HACCP based systems in Small and Medium Sized Enterprises (SMEs) has been problematical and the potential complexities of implementing HACCP based systems in SMEs are discussed.*

### 1.1 The evolution of Hazard Analysis into a legislative framework

In the late 1980s and early 1990s, the legislative measures in place to control food borne illness were found to be deficient. Food scares caused by *Salmonella* species in eggs, *Listeria monocytogenes* in cheese and *Campylobacter* species in poultry highlighted the need for a new approach to food safety.

During this period the legislative control of food safety in England and Wales was set out in the Food and Drugs Act 1955, the Food Act 1984 and numerous subordinate regulations. In relation to catering operations the Food Hygiene (General) Regulations 1970 [1970 No 1172], contained a set of rules relating to food premises, equipment, washing and sanitary facilities and food handlers. FBOs were under a regulatory obligation to comply with these requirements. Such legislation was prescriptive and did not require FBOs to adopt a proactive approach to food safety management.

Compliance with these requirements was assessed by authorised local authority Food Safety Officers (FSOs) who undertook food hygiene inspections, using what was commonly known as the ‘floor, walls and ceiling’ approach. The result of the regulatory encounter was a list of specific requirements which the FBO was required to complete. Once the requirements were met, the FBO, believing they were fully compliant, generally took no further action until the next food hygiene inspection occurred.

FBOs were under no legal obligation to adopt a proactive approach to food safety management. Although the relevant legislation has changed substantially since that time, experience suggests there still exists a predominance of this mentality amongst FBOs in the present day.

The techniques of quality control at that time had a strong emphasis on end product testing, and there was uncertainty as to what constituted an effective quality control programme in relation to food safety (Corlett and Pierson, 1992).

In response to these concerns, an expert committee (the Richmond Commission) was established to investigate food safety issues. The specific remit of this Commission was to advise the Secretary of State for Health, the Minister of Agriculture, Fisheries and Food (MAFF), and the Secretaries of State for Wales, Scotland and Northern Ireland, on matters relating to the microbiological safety of food. The findings of the Committee were published as the Report of the Committee on the Microbiological Safety of Foods (Part 1, 1990), and became widely known as the Richmond Report.

The Richmond Commission examined specific questions relating to the increased incidence of microbiological illnesses of foodborne origin, particularly *Salmonella*, *Listeria* and *Campylobacter* (Richmond, 1990). It tried to establish whether these increased incidences were linked to changes in agriculture, food production, food technology, distribution, retailing, catering and food handling within the home, and to recommend action as appropriate.

A primary objective of the Commission was to ensure that all who dealt with food were fully aware of the ways in which proper storage, handling and preparation of food

could eliminate or minimise the risk of food poisoning (Richmond, 1990). The Commission concluded that proper awareness on the part of those involved at all stages of the food chain could ensure a high degree of protection for the consumer (Richmond, 1990).

The Report aimed to identify points within the food chain which were critical to the microbiological contamination of food and where controls could most effectively be applied. The Richmond Commission was therefore calling for a proactive preventative approach to be incorporated into food safety legislation, allowing control over raw materials, processes, environment, personnel, storage and distribution. Approaches of this kind were already being implemented, the most widely accepted being the HACCP system.

The Report recognised the benefits of HACCP and concluded that the adoption of HACCP principles at all stages of the food chain would greatly enhance food safety and commended its widespread application. It recommended that all food processes should be designed on HACCP principles, operated by properly trained staff using validated control programmes in premises containing appropriate hygienic facilities (Richmond, 1990).

According to Richmond there are several advantages in using HACCP in the control of food safety:

1. It focuses effort on the control steps in the operation.
2. It uses easily monitored parameters as control measures.
3. The results are immediate and accessible and are often fast and simple to obtain e.g. time, temperature or visual assessment.
4. Control is effected by the process operator rather than by a laboratory remote from the operation.
5. All potential hazards are taken into account.
6. It is a flexible management tool and can be applied to any changes in operation.
7. HACCP involves all levels of staff in product safety, at both technical and non-technical levels. It entails a team effort requiring the support and

commitment of all staff at all levels within an organisation (Richmond, 1990).

Citing HACCP as the overarching system that governs the UK's approach to dealing with food safety issues and in its structured approach, Pennington (2009) described HACCP as both a philosophy and a practical approach. This reflects its preventive doctrine and its proactive, structured approach to analysing and controlling food safety hazards.

## **1.2 The origins and development of HACCP and its derivatives**

The concept of HACCP and its practical implementation were the result of work undertaken by the Pillsbury Company and the projects it undertook in food production and research for the US space programme. The components of HACCP were developed in conjunction with the National Aeronautics and Space Agency (NASA), the Natick Laboratories of the US Army and the US Air Force Space Laboratory Project Group.

The path which led to HACCP began in 1959 when Pillsbury were required to produce food that could be used under zero gravity conditions in manned space craft. An essential requirement for the food – and the most difficult part of the programme - was the requirement to achieve the maximum assurance possible of the absence of physical, chemical and microbiological hazards within the food (Corlett and Pierson, 1992).

The principles of HACCP were derived from an engineering system known as Failure Mode and Effect Analysis (FMEA). This system considers a product throughout its manufacturing cycle, investigates potential errors within the total system and transfers control from end product testing to the design and manufacture of the product. It focuses on potential events that can and will make a product fail (Harris and Grady, 1994). The similarities between FMEA and HACCP focus on both techniques being iterative, which promotes systematic thinking when a new product is developed in the case of FMEA, or when food is consumed in the case of HACCP. The “Modes of Failure” system was applied with some modifications to the HACCP model.

The existing techniques of quality control prior to HACCP had a strong emphasis on end product testing and would have resulted in a large part of each food batch being utilized for testing, leaving insufficient amounts of food available for consumption during the manned space missions. In terms of quality assurance programmes and the food industry at that time, there was no uniformity of approach or even a consensus of understanding as to what constituted a good programme (Corlett and Pierson, 1992).

A system needed to be developed that was preventative, allowing control over raw materials, processes, environment, personnel, storage and distribution in order to facilitate food safety. Such control, accompanied by correct record keeping, was thought to produce a high level of assurance that the food product was safe for human consumption. NASA already had in place effective rules relating to record keeping and this facilitated the development of the approach and formed the basic part of the HACCP system in its present day form.

Pillsbury published the first comprehensive treatise on HACCP in 1973. During the mid-1970s, Pillsbury first used HACCP for the control of food safety in the US Space Programme. Although used in Pillsbury plants since 1971, it was not until 1985 that HACCP was seriously considered for wider application in the food industry (Corlett and Pierson, 1992).

In 1985, the HACCP system was recommended by the National Academy of Sciences in their publication “An Evaluation of the Role of Microbiological Criteria for Foods and Food Ingredients.” A National Academy of Sciences Committee (Subcommittee on the Microbiological Criteria for Foods and Food Ingredients) concluded that HACCP was essential to control microbiological hazards and that end product testing was not adequate to prevent foodborne diseases (National Academy of Sciences, 1985).

### **1.3 The principles of the HACCP system**

The concept of HACCP was first adopted by the Codex Alimentarius Commission in 1993. The concept is based on 7 fundamental requirements or principles; these are set out by the FAO / WHO as follows:-

1. *Conduct a hazard analysis*

This is a process of collecting and evaluating information on physical, chemical and microbiological hazards and the decision as to whether they are significant to food safety.

2. *Determine the Critical Control Points (CCPs)*

A CCP is a step at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level.

3. *Establish Critical Limit(s)*

A critical limit is the criterion that separates acceptability from unacceptability.

4. *Establish a system to monitor the control of the CCP*

Monitoring is the act of conducting a planned sequence of observations or measurements of control parameters to assess whether a critical point is under control.

5. *Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control*

Corrective action is any action taken when the results of monitoring at the CCP indicate a loss of control.

6. *Establish procedures for verification to confirm that the HACCP system is working effectively*

Verification is the application of methods, procedures, tests and other evaluations, in addition to monitoring, to determine compliance with the HACCP plan.

7. *Establish documentation concerning all procedures and records appropriate to these principles and their application*

A key component of the HACCP plan is recording information that can be used to prove the food product was produced safely (FAO and WHO, 1997).

HACCP is product-specific i.e. an analysis of the handling of one product will not apply to any other product as there will always be differences in ingredients, process conditions and other factors which could influence safety. The system thus lends itself particularly to processes that produce food in large volumes and a small number of products, often with close similarities in the conditions of processing employed. In many cases such products are produced by medium or large sized companies with the technical resources required for the effective implementation of HACCP.

There are, however, many small businesses which produce a wide range of food products in small amounts. For example, a restaurant offers numerous menu items, and a small bakery produces a range of bread, bread based products and cakes. Businesses such as these are most unlikely to have the resources, either technical or otherwise, to implement a product-specific system such as HACCP.

For this reason, generic versions of the HACCP system have been developed for implementation in smaller food businesses. They are not product-specific and are therefore applicable to a number of products similarly handled; such generic approaches, widely referred to as forms of hazard analysis, are nonetheless based closely on core HACCP principles.

#### **1.4 Food safety legislation**

The Food and Drugs Act 1955, and the numerous sets of regulations made under the Act, comprised for many years the legislative controls governing the handling of foods in the UK. This was replaced by the Food Act 1984, which essentially was a consolidation of the changes made during the preceding 30 years and did not fundamentally alter the earlier approach.

An important development, which occurred after the passage of the Food and Drugs Act 1955, was the accession of the UK to membership of the European Economic Community, later to become the European Union (EU). This necessitated the incorporation into UK legislation of measures agreed at European level, some of which were directly concerned with food safety.

During the late 1980s, it became increasingly apparent that existing UK legislation was inadequate to meet the growing challenge of assuring the safety of food. As a consequence, the Food Safety Act 1990 was introduced with the aim of placing the responsibility for ensuring the safety and wholesomeness of food clearly on the producer who would effectively be required to take all reasonable precautions and exercise all due diligence in the handling of foods.

As with previous Acts, the Food Safety Act 1990 enabled the introduction of regulations concerned with matters such as food composition, labelling and food hygiene and thus provided the means by which European requirements were introduced into UK legislation.

In 1993, the year in which the HACCP concept was adopted by the Codex Alimentarius Commission, Council Directive 93/43/EEC [OJ L227, 1.9.1994, p.31] on the Hygiene of Foodstuffs was introduced into European legislation. In recognition of developments in approaches to the management of food safety, Article 3.1 of the Directive introduced a requirement that food businesses should establish and operate food safety programmes based on HACCP principles. Article 3.1 stated that:

*“ Food business operators shall identify any step in their activities which is critical to ensuring food safety and ensure that adequate safety procedures are identified, implemented, maintained and reviewed on the basis of the following principles, used to develop the system of HACCP :*

- analysing the potential food hazards in a food business operation;*
- identifying the points in those operations where food hazards may occur;*
- deciding which of the points identified are critical to food safety – the ‘critical points’;*
- identifying and implementing effective control and monitoring procedures at those critical points, and*
- reviewing the analysis of food hazards, the critical control points and the control and monitoring procedures periodically and whenever the food operations change.”*

Although food businesses were required to establish and operate systems based on HACCP principles, there was no requirement at this stage for the systems to be documented or for records of compliance to be kept. (N.B. It is important to note that the fieldwork for this investigation was carried out while these regulations were in force, hence the absence of documentation could not be taken as an indicator of non-compliance).

The enabling powers of the Food Safety Act 1990 incorporated the Directive into UK legislation in the form the Food Safety (General Food Hygiene) Regulations 1995. More specifically, the provisions of Article 3.1 were manifested in Regulation 4.(3). The multi – component nature of Regulation 4.(3) was identical to the EU Council Directive 93/43/EEC requirement and used similar wording. An Annex to the Directive, which was also introduced into UK legislation, contained general prescriptive requirements relating to food premises, food equipment, food waste, personal hygiene and the training of food handlers. The Food Safety (General Food Hygiene) Regulations 1995 were regulatory requirements from 1st January 1995 until 31<sup>st</sup> December 2005.

Following the revocation of the Food Safety (General Food Hygiene) Regulations 1995, a more stringent requirement to implement a documented HACCP based food safety management system became a regulatory obligation under Article 5 of EC 852/2004. The EC provided guidance which encouraged food authorities to take a flexible approach to enforcement of the requirement and to recognise that the capacity of a FBO to demonstrate the existence of an effective food safety management system based on HACCP principles would be dependent on the nature and size of the food business (European Commission, 2005). In effect this recognised that a small business handling a range of food products e.g. a restaurant or small bakery, cannot realistically be expected to achieve the same level of product-specific control as a well resourced large food production company. For this reason the adoption of a full HACCP procedure was not expected of small food businesses; rather they were expected to establish and implement systems based on HACCP principles i.e. a generic form of hazard analysis, properly implemented, would be acceptable.

This requirement was introduced in the UK through Regulation 4.(3) of the Food Safety (General Food Hygiene) Regulations 1995. Advice to caterers and other small food businesses regarding compliance with Regulation 4.(3) was provided in the Industry Guide to Good Hygiene Practice: Catering Guide 1997 (Chartered Institute of Environmental Health, 1997). This guide recognised the diverse nature of catering businesses and the different methods of food preparation and service and focused on generic approaches to compliance with Regulation 4.(3).

In order to assist FBOs and facilitate compliance other generic models were produced.

## **1.5 Generic models of Hazard Analysis**

### **1.5.1 Assured Safe Catering (ASC)**

This approach was prepared by a special sub-group of the Campden Food and Drink Research Association Working Group. Its purpose was to provide guidance on one method of applying HACCP principles to catering operations (Campden, 1993). It was specifically developed for caterers to control food safety hazards. It used a graduated approach at each operational step, from the selection of ingredients to the service of food to the final consumer. It stated an advantage of the system to be the provision to the caterer of a sound basis to demonstrate the implementation of all reasonable steps to prevent hazardous foods reaching the consumer by the identification and control of Critical Control Points (CCPs).

ASC broke down catering operations into distinct steps such as goods received, storage and cooking. It considered the physical, chemical and biological hazards associated with each step and listed the appropriate control measures, including the controls which were critical to the preparation of safe food - the CCPs. It also provided advice on practical monitoring procedures. ASC was claimed to be suitable for all catering operations regardless of size or complexity (Campden, 1993).

### **1.5.2 Systematic Assessment of Food Environment (S.A.F.E)**

S.A.F.E was formulated by the British Hospitality Association (BHA) and used

HACCP principles; it was claimed to be applicable to all catering operations. It placed importance on a FBO investing time and commitment in order to ensure food safety (BHA, 1991). It restricted monitoring to three general areas of food production:

1. Keeping Food Clean - the prevention of food contamination;
2. Keeping Food Hot - bacterial destruction or growth inhibition through cooking and / or hot holding;
3. Keeping Food Cold - inhibition of bacterial growth by rapid cooling and appropriate storage temperatures.

### **1.5.3 Safer Food Better Business**

A further model was developed in 2002 by a multidisciplinary team of the HACCP branch of the Food Standards Agency. This project aimed to implement HACCP via a 'bottom up' approach in an attempt to implement HACCP based systems in catering establishments, with guidance provided by caterers themselves.

The system, known as "Safer Food Better Business", was a holistic approach incorporating all the principles of Good Hygiene Practice (GHP) and HACCP; it was claimed to be straightforward, accessible and achievable (Taylor and Taylor 2004).

In an attempt to divide the immense topic of food safety into more manageable sections, the team utilised the existing media coverage used at that time by the FSA in their Food Hygiene Campaign – known as the 4 Cs: Cooking, Chilling, Cleaning and Cross Contamination. A 5<sup>th</sup> C to represent the management aspect was also thought to be needed. For this reason the FSA Team added the 5<sup>th</sup> C, termed Control.

The Safer Food Better Business campaign ran parallel with the Food Hygiene Star Rating Scheme. The Freedom of Information Act 2000 and the Environmental Information Regulations 2004 gave the public a right of access to certain information held by public bodies. Information held by food authorities in relation to food hygiene inspections was an example of such information.

## **1.6 Food Hygiene Rating Schemes**

In January 2006, the London Borough of Camden (LBC) was one of the 200 local authorities that participated in the Food Hygiene Star Rating Scheme, then commonly known as “Scores on the Doors”. Each food business, following its primary inspection, received a risk rating score which correlated to the star rating awarded to the food business. The objective of the scheme was to provide an incentive for food businesses to improve their food safety standards. Evidence suggests that similar schemes in other countries had produced such desired improvements (Central Office of Information (COI) and Food Standards Agency (FSA), 2008).

The individual scores showed how well a food business had complied with relevant food hygiene legislation. The risk rating score reflected the structural condition of the food premises, the food hygiene practices and procedures and the confidence in management to handle food safely. The risk rating scores and the related star ratings applied to the last primary food hygiene inspection and therefore may not have represented the conditions within a food business following that inspection.

To help in consistency across local authorities, the application of the scores used to decide the star rating was based on the national Food Safety Act Code of Practice 1990. Food businesses involved in the scheme were awarded one of the following star ratings:

### **5 Stars**

Excellent: Very high standards of food safety management. Fully compliant with food safety legislation.

### **4 Stars**

Very good: Good food safety management. High standard of compliance with food safety legislation.

### **3 Stars**

Good: Good level of legal compliance. Some more effort might be required.

## **2 Stars**

Broadly compliant: Broadly compliant with food safety legislation. More effort required to meet all legal requirements.

## **1 Star**

Poor: Poor level of compliance with food safety legislation; much more effort required.

## **No Star**

Very poor: A general failure to comply with legal requirements. Little or no appreciation of food safety. Major effort needed.

### **1.7 The emergence of EU Regulation (EC) 852/2004 and its consequences**

The 1993 Directive was superseded by EU Regulation (EC) 852/2004 which was incorporated into national legislation as an interim measure through the Food Hygiene (England) Regulations 2005 and more fully through the Food Hygiene (England) Regulations 2006. It is these regulations which were in force at the time of writing this research.

The 2006 regulations explicitly stated that the primary responsibility for food safety rests with the FBO. The regulations required the general implementation of procedures based on HACCP principles together with the application of good food hygiene practice.

FBOs were required to put in place, implement and maintain a permanent procedure or procedures based on HACCP principles. The wording of these regulations was very similar to that found in the guidelines adopted by the Codex Alimentarius Commission. The regulations stated that the principles shall consist of the following:

- a. Identifying the hazards that must be prevented, eliminated or reduced to acceptable levels;*
- b. Identifying critical control points at the step or steps at which control is essential to prevent or eliminate a hazard or reduce it to acceptable levels;*

- c. Establishing critical limits at critical points which separate acceptability from unacceptability for the prevention, elimination or reduction of identified hazards;*
- d. Establishing and implementing monitoring procedures at critical points;*
- e. Establishing corrective actions when monitoring indicates that a critical point is not under control;*
- f. Establishing procedures, which shall be carried out regularly, to verify that the measures outlined in subparagraphs (a) to (e) are working effectively and*
- g. establishing documents and records commensurate with the nature and size of the food business to demonstrate the effective application of the measures outlined in subparagraphs (a) to (f).*

When any modification is made to the product, process, or at any step, the FBO shall review the procedure and make the necessary changes to it.

There was a requirement for FBOs to provide the competent authority with evidence of compliance with HACCP principles in the manner that the competent authority required, taking into account the nature and size of the food business. The “competent authority” under this regulation means the control of a Member State competent to ensure compliance with the requirement of the Regulation, or any other authority to which that central authority has delegated that competence. The LBC is the competent authority for such food businesses within the borough.

FBOs were required to ensure that any documents describing the procedures developed in accordance with these regulations are up-to-date at all times. Any documentation, including records, had to be retained for an appropriate period.

### **1.8 HACCP/Hazard Analysis implementation in food businesses**

There is evidence that food businesses, irrespective of size or the types of foods produced, experience difficulties in establishing food safety management systems (Fielding et al, 2011). With specific reference to the hazard analysis requirement of Regulation 4.(3), it has been considered by food businesses as something to which

there are no likely benefits attached. It therefore has not been readily embraced by Small Less Developed Businesses (SLDBs) (Ryan, 2001). The definition of SLDBs used in this research is the definition given by the WHO: “*businesses that because of their size, lack of technical expertise, economic resources or nature of their work, encounter difficulties in implementing HACCP in their food businesses*” (WHO, 1999). The term “less developed” refers to the status of the food safety management system and not the number of staff or volume of production. It has been recognised that application of a formalised HACCP system in the majority of SMEs is not feasible. However, such businesses are of great importance. The definition of an SME in this research is a business that has up to 250 employees; this is the definition used by the European Community (EC) (European Community, 2005).

Kane stated that the low take-up of HACCP based systems in small food businesses is a serious concern, especially in the face of high levels of foodborne disease (Kane, 2001). According to Ryan, the low level of compliance is worrying in that many incidences of foodborne diseases are linked to SLDBs (Ryan, 2001).

In 2006, a national survey was undertaken by the Food Standards Agency to assess the standards of hygiene in UK food businesses. The sampling plan used in the survey included food businesses of varying types and sizes. The results showed that SLDBs such as caterers and take-aways were businesses that posed the greatest risk to public health (FSA, 2006). This survey of the overall status of hygiene practices, procedures and controls found that 13% of food businesses surveyed showed major non-compliances with statutory obligations, with 46% showing some non-compliance with either statutory requirements or industry codes of practice (FSA, 2006).

Thus there was considerable evidence of generally poor compliance among SLDBs with the requirements of Regulation 4.(3), together with the concern that this finding may have implications for food safety. It was therefore important both to understand why the level of compliance was not as intended and to initiate measures which would improve the level of compliance.

## **1.9 The significance of hygiene prerequisites in HACCP implementation**

The original development and implementation of HACCP systems occurred in new custom built manufacturing premises. These premises generally had dedicated single line production runs, incorporating the best available design and construction, which were maintained to a very high standard of hygiene. Such operations included virtually every possible precaution to ensure food safety. These prerequisite standards therefore already existed and the HACCP system was superimposed on these standards.

The WHO (1999) believed that a critical dependency exists between HACCP and the hygienic prerequisites. It follows that without such prerequisites being in place it is difficult for a HACCP based food safety management system to be effectively implemented. Hygienic prerequisites can be considered as forming the essential foundation upon which a HACCP based system is constructed.

The hygiene prerequisites investigated in this research were:

- i. adequate structural condition and layout of the food premises;
- ii. effective cleaning and disinfection of hand and food contact surfaces;
- iii. good personal hygiene of food handlers;
- iv. effective pest control procedures within food premises;
- v. adequate training and supervision of food handlers.

## **1.10 Constraints to the implementation of HACCP in SMEs**

Ward (2001) identified some of the main barriers to effective hazard analysis implementation as:

- Literacy and cultural difficulties;
- Lack of knowledge;
- Lack of perceived benefits;
- Time and costs;
- Lack of legal requirement for FBOs to document the process.

Small food businesses generally perceive HACCP based systems as difficult to understand and implement due a number of factors. Such systems require the management of a complex set of activities that demand expertise, skill, time and resources that most small food businesses do not possess. Food businesses generally do not have a real belief in the efficacy of HACCP or its positive contributions to the business. HACCP is often a 'bolt on' to old processes and procedures (Ward, 2001).

Engel (2000) stated that HACCP based systems can be of use to small businesses provided that they are not over-elaborate and are easy to understand. Engel also identified some commonly occurring mistakes in relation to the application of HACCP based systems in small food businesses, which prevented their successful implementation. These included the perception that the system was theoretically elaborate, abstract and therefore not put into daily practice, and also the lack of explanation to the persons who have to work with it (Engel, 2002). The understanding of risk varies according to a person's place in the organisational hierarchy (Hutter, 2012).

A research project undertaken by the FSA found that the majority of small food businesses involved in their research had some form of HACCP plan in place, although the level of regulatory compliance was not specified. The research noted variance in the usefulness of HACCP within food businesses. Some food businesses endorsed HACCP as a valuable tool while others noted barriers to its effective implementation, principally due to insufficient knowledge of particular food processes. A common complaint of food businesses relating to HACCP based systems was record keeping. Moreover, small businesses found it difficult to keep up with current regulatory changes (FSA, 2001).

In 2001, the EU published proposals for the consolidation of the vertical and horizontal hygiene Directives. These proposals provided for a more risk-based approach to food safety in EU legislation. The consequence of these proposals was that all food businesses, excluding primary producers, were required to implement HACCP based systems across the food chain.

These EU proposals were considered in the UK by several relevant stakeholders, namely the Local Authorities Coordinators of Regulatory Services (LACORS), the Royal Environmental Health Institute of Scotland (REHIS) and the Chartered Institute of Environmental Health (CIEH). These bodies produced a joint statement which recognised that the statutory implementation of HACCP would raise food safety standards in the UK. The statement reported the aims of HACCP implementation as follows:

1. to improve food safety;
2. to introduce a systematic approach to the management of food safety in all food businesses;
3. to ensure a dynamic approach to the management of food safety;
4. to improve consumer confidence (LACORS, REHIS, CIEH, 2001).

Whilst endorsing the implementation of HACCP, the contributing bodies stated there were several key areas where further consideration was required in order to ensure that the aims of HACCP were achieved. These key areas have formed barriers to the successful implementation of HACCP in SLDBs.

The barriers fell into 4 main areas:

#### 1. Perceived complexity

In general, SLDBs and enforcers believed the development of a HACCP based system was a complex task. SLDBs believed that the system requirements for documentation, monitoring and verification were onerous and were seen as unnecessary by small businesses.

There existed amongst SLDBs a general lack of understanding of HACCP. Increased knowledge of HACCP principles and their application in “low risk” food businesses was vital to making implementation a success (LACORS, REHIS, CIEH, 2001). Rukeza (2002) raised concerns of the applicability of HACCP based systems in SLDBs and stated that HACCP is a dynamic process not easily transferable to small businesses, with its requirement for basic microbiological knowledge, hygiene and use of new terminology that meant very little to SLDBs. Rukeza (2002) also doubted the

competency of FBOs in SLDBs to implement HACCP successfully, as HACCP is a highly complex system involving dynamic processes and FBOs of SLDBs lacked the competence for its successful implementation.

## 2. Lack of knowledge

The joint statement recorded that the understanding of risk assessment, management and fundamental microbiological / hygiene issues was poor, particularly in SLDBs. The education of such FBOs to a level where they could undertake and implement HACCP for their own operations without assistance was impractical in terms of time and resources (LACORS, REHIS, CIEH, 2001).

The previous attempts of local regulatory bodies tasked with both providing information and enforcing the hazard analysis requirement were not effective, due to lack of time and resources. The resultant inadequate education led to both the basic understanding of HACCP principles and the level of compliance being poor.

In a survey of food businesses undertaken in 1999 within the London Borough of Haringey, 59% of those surveyed had no idea about hazard analysis (Morrison, 1999). Lockhead stated that the implementation of a food safety management system based on HACCP principles requires the input of specialist personnel that are not available to most SMEs (Lockhead, 2005).

## 3. Enforcement

The joint statement recognised that the implementation of HACCP would lead to increased effectiveness by focusing activity on the responsibility of a food business to manage food safety, allowing enforcers to effect change by challenging risk assessments where poor practices occurred.

There was a general acceptance that enforcers would undertake an educational role in communicating HACCP principles to SLDBs. The joint statement also acknowledged that the twin approach of education and enforcement must be applied if HACCP

implementation was to achieve its aims. This approach would then have to be included in the UK implementation strategy (LACORS, REHIS, CIEH, 2001).

#### 4. Communication

The joint statement reported that effective communication was the key to successful HACCP implementation. Misunderstandings in the UK had arisen because HACCP terms were used inaccurately and inconsistently, with confusing jargon being used to explain the seven principles.

The statement concluded with the joint bodies supporting the proposed implementation of food safety management systems in all food businesses. However, before implementation the key issues stated above would need to have been agreed by relevant stakeholders and then resolved (LACORS, REHIS, CIEH, 2001).

Research undertaken relating to Welsh hospitality businesses found communication issues were a barrier to regulatory compliance (Coleman *et al*, 2001). Their research revealed that 82% of respondents believed that legal compliance with food safety requirements would be improved if regulatory requirements were simplified. The majority of respondents thought that implementing food safety precautions was intellectually challenging. Further, the respondents exhibited little optimism that future safety legislation would be produced in a simplified form.

### **1.11 Principal aims of the research**

#### **1.11.1 To investigate the validity of the following hypotheses:**

*1. That constraints exist that result in making the various components of Reg 4.(3) too complex for the FBOs of small and medium sized enterprises (SMEs) to effectively implement in the absence of extensive guidance or disproportionate resources.*

*2. That where implemented by the FBOs of SMEs, the purpose of hazard analysis was the avoidance of legal action rather than a procedure to control food safety risks.*

*3. That a regulatory model based on cooperation between the enforcing authority and the FBO utilising simple guidelines is more effective than a punitive approach for the successful implementation of hazard analysis.*

#### **1.11.2 Subsidiary aims of the research**

- 1. To assess the prevalence of the defined food hygiene prerequisites within the food businesses forming the study populations.*
- 2. To quantitatively and qualitatively assess the level of understanding of hazard analysis principles amongst FBOs /managers within small to medium sized food businesses.*
- 3. To assess the identification of the critical control points (CCPs) and the documentation used for the monitoring of CCPs within the food businesses forming the study populations.*
- 4. To evaluate the research findings with regard to the regulatory obligation on FBOs to implement and maintain a system based on HACCP principles.*
- 5. To produce recommendations for improvements in the application and effectiveness of the HACCP based systems in food businesses within the LBC.*

# Chapter 2

## Methodology

## CHAPTER 2

### 2.0 METHODOLOGY

*This section describes the methodology of the sampling procedure used in the research and the fieldwork undertaken in the gathering of the primary data. It defines the geographical area in which the research was undertaken and presents an argument for the wider applicability of the research findings.*

*The characteristics of the food businesses forming the populations under investigation were defined using the risk rating criteria set out in the Food Safety Act 1990 Code of Practice. This section provides the basis for their inclusion in the research.*

*The objectives of the sampling scheme and the statistical basis used for the selection of sample sizes for each study population are discussed. The methodology used in the design of the Hazard Analysis Questionnaire and Food Premises Inspection Checklist is examined, as are the procedures undertaken during the fieldwork.*

*The criteria used for the assessment and determination of compliance with HACCP and its derivatives are discussed.*

#### 2.1 The geographical area in which the research was undertaken

The London Borough of Camden (LBC) contains a wide commercial profile in respect to food businesses, containing a total number of 2762 registered food businesses within a geographical area of 22 sq. km (London Borough of Camden, 2003). It has large commercial centres incorporating hotels, restaurants, outdoor markets, mobile food vendors, universities, care homes, hospitals with associated catering including cook – chill processes. The LBC also contains various schools, nurseries / pre - school playgroups, top tourist attractions and large public entertainment venues with associated food outlets and hospitality facilities. Numerous street festivals occur throughout the borough, as do large open-air concerts, each with associated food outlets.

Camden's food businesses are primarily caterers and retailers. A particular feature within Camden are the Camden Lock Markets, a tourist attraction containing more than 80 small retail food units providing a wide range of ethnic foods.

In addition, the LBC contains 5 European Union Approved Establishments dealing with dairy and fish products, meat preparation and packing. Several food producers and manufacturers are also located within the borough.

The food businesses are located within discrete areas of social affluence. The LBC's Ward Comparisons 2001 stated *“Camden has evolved over the centuries into recognisable local areas and urban villages of differing social classes.”* It further stated that *“the residents of the borough form distinctive clusters and groups representative of those found around Britain, including suburban, rural, industrial and inner city areas”*.

In addition to the residents of the borough, large numbers of visitors attracted by the commercial, leisure, educational and shopping facilities frequent the commercial food establishments. Over 200,000 people work in or travel through Camden on a daily basis. The influx of visitors is enhanced by extensive transport facilities within the borough, including the St. Pancras International Rail Terminal, Kings Cross Station, Euston Station and their associated food businesses.

Although the research is focused on the geographical area of Camden, it is argued that the large number of food businesses within a condensed geographical area and the wide spectrum of food establishments in terms of ethnicity of FBOs and the food businesses' main activities provide a justifiable study population. The varying ranges of socio-economic status of persons using the food establishments adds further to making the food businesses representative of those located in other major cities outside the study area.

## **2.2 The approach to the investigation**

The purpose of the investigation was to gather information in the form of primary data relating to the understanding of hazard analysis and its associated legal requirements on the part of the FBOs of small to medium sized (SME) food businesses and to assess the extent of hazard analysis implementation within these businesses. It was also intended to identify the constraints which resulted in non-compliance with the hazard analysis requirement.

The level of understanding of hazard analysis and the legal obligations of food businesses was determined by means of direct interviews with the FBOs / managers of a statistically based sample of food businesses operating within the LBC. A structured questionnaire was developed by the researcher and used during each interview. At the time the interview was conducted, the researcher undertook an assessment of the hygiene prerequisites and the extent of legal compliance with the hazard analysis requirement.

On completion of the investigative work the data gathered was collated and analysed. In response to the findings a development exercise, which led to an Intervention Project, was undertaken involving the FBOs / managers of high risk food businesses. The aim of this exercise was to determine whether an approach to the improvement of the level of understanding and implementation of hazard analysis based on support and advice would be more likely to succeed than one based primarily on punitive enforcement action.

### **2.3 Risk rating categories**

The study populations were randomly selected from SMEs within the risk rating categories A, B and C as defined by the Food Safety Act 1990, Code of Practice (COP). The requirements and the rationale of the COP are stated below.

Food authorities are required to implement and maintain a scheme of priority classification of food businesses in their area using a defined inspection-rating scheme. The COP requires an inspection rating score to be assigned to each individual food business. The inspection rating for a food business is dependent on the following criteria:

#### **1. The potential hazards**

This is the sum of the scores allocated to:

- i. the type of food and method of handling
- ii. the method of processing
- iii. the type of consumers at risk

## 2. The level of compliance

This is the sum of the scores allocated to:

- i. food hygiene and safety, including food hygiene practices and temperature control
- ii. the structural condition of the food premises, including cleanliness, layout, lighting and ventilation.

## 3. Confidence in the management system

This is the score allocated by the Food Safety Officer (FSO) on the basis of his / her judgement of the likelihood of the maintenance of satisfactory compliance in the future.

## 4. Significance of risk

The FSO is required to consider whether there was a significant risk of food being contaminated with *E.coli* 0157, other VTEC or *Cl. botulinum*.

Under the COP, food businesses are rated in accordance with the above criteria. A food business, depending on its risk rating, can be assigned to a risk rating category of A to E. The high to medium risk food businesses are rated A, B or C. The risk rating scores determine the frequency with which planned food hygiene inspections are undertaken by the food authority.

The food hygiene inspection frequencies and the risk rating categories and frequencies are listed in Table 1.

<b>Risk rating category</b>	<b>Frequency of inspection</b>
A	at least every 6 months
B	at least every 12 months
C	at least every 18 months
D	at least every 2 years
E	alternative enforcement strategy

Table 1. Risk rating categories and inspection frequencies

Food businesses with a risk rating of D or E generally possess the following attributes:

1. the retail handling of low risk foods;
2. supply to a local trade only;
3. satisfactory standards of compliance with food safety and hygiene requirements;
4. no significant risk of contamination of food products by dangerous foodborne pathogens.

Examples of food businesses within categories D and E include off licences, greengrocers, confectioners and retail food shops handling low risk foods such as vegetables, fruit, canned and other shelf stable food products. Within such food businesses, the consequences of non-compliance with HACCP and its derivatives would not generally result in a significant risk to public health. For this reason businesses within these categories were not included in this study.

## 2.4 The sampling process

A combined sample size of 511 medium to high risk SME food businesses within risk rating categories A to C was used for research purposes. This represented

approximately 19% of the total population of food businesses risk rated A to E registered with the LBC.

The sampling frame was identified from a list of all the sampling units available and was formed from all known registered food businesses in risk categories A, B and C derived from the Food Premises Register maintained by the LBC.

The sampling scheme involved a probability procedure where each element of the defined populations had a known chance of being selected for sampling. A random sampling procedure, using populations risk rated A, B and C, was undertaken to select the elements from each population. For each risk rated population, food businesses were selected in order to provide a confidence level of 95% and at a 5% significance level that those selected were representative of the food businesses found within each risk band, in terms of their risk rating characteristics for each risk category. This procedure ensured that the food businesses forming the elements of each population were represented in the sampling scheme.

The food businesses forming each population from which random samples were drawn, were the food businesses registered under the provisions of the Food Premises (Registration) Regulations 1991 [1991 No 2825].

The stages of the sampling process are set out below.

## **2.5 Defining the populations**

### **Sampling unit**

A sampling unit was an element available for selection during the sampling process and was a food business registered by the LBC and assigned a risk rating of A, B or C. The objective of the sampling scheme was to provide an assurance, with a 95% confidence level and at a 5% significance level, that the samples randomly selected from populations A, B and C were representative of the actual food businesses found within those defined populations.

## **2.6 Determination of the sample sizes for populations risk rated A, B and C and the statistical basis for the selection of the sample size for each population**

An assumption was made that factors that determine the risk ratings of the food businesses within each rating category were normally distributed, in which case the Central Limit Theorem applies. The Central Limit Theorem encompasses the concept that when a population is repeatedly sampled, the average value of the attribute obtained from the samples is equal to the true population value. Furthermore, the values obtained from those samples are normally distributed about the true value. In a normal distribution approximately 95% of the sample values are within  $\pm 2$  standard deviations of the true population value.

The equation used to determine the appropriate sample size for each population was developed by Cochran (1963).

The formula is defined as:

$$n_0 = \frac{Z^2 pq}{e^2}$$

where:  $n_0$  = the theoretical sample size

$Z$  = the value found in statistical tables which contain the area under the normal curve that gives the desired confidence level, in this case 95%

$e$  = the desired level of precision, in this case 5% (0.05)

$p$  = an estimate of the proportion of food businesses in a population that will fall within the sample.

$q$  = estimate of variance

It was assumed 50% of food businesses would fall within the sample and 50% would not. The choice of 50% provided the most conservative estimate of the proportion. Thus  $p = 0.5$  i.e. 50%.

$$q = 1 - p = 0.5$$

Therefore,

$$n_0 = \frac{Z^2 pq}{e^2} = \frac{(1.96)^2 (0.5)(0.5)}{(0.05)^2} = 384.16$$

For populations where the size of the population is finite and known, the sample size can be adjusted using the following equation (Cochran, 1963).

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

Where  $n$  = the sample size required from the finite population

$N$  = the population size

In the case of the finite populations risk-rated A, B or C studied in this research a corrective factor was applied.

## 2.7 Sample size calculations

### 1. For population A

Using the adjusted equation for a population of 35

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} = \frac{384.16}{1 + \frac{383.16}{35}} = 32.15$$

Minimum number of randomly selected food businesses required = 32

Due to the relatively small number in the A population an additional 2 business were randomly selected for inclusion = 34

### 2. For population B

Using the adjusted equation for a population of 301

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} = \frac{384.16}{1 + \frac{383.16}{301}} = 169$$

Minimum number of randomly selection food businesses required = 169

3. For population C

Using the adjusted equation for a population of 1572

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} = \frac{384.16}{1 + \frac{383.16}{1572}} = 308.9$$

Minimum number of randomly selected food businesses required = 309

## **2.8 Selection of random samples for each population**

The random selection of registered food businesses within each population involved utilising a software program that is a component of the FLARE System. This system is a management reporting system that is used by all environmental health disciplines within the LBC. The FLARE System Random Number Generation Program selected the required number of sampling units from the food businesses registered by the LBC.

It was anticipated that a proportion of food businesses within each study population would either refuse to participate in the research or would have ceased trading and therefore not be available for inclusion. As a contingency an additional 10% of food businesses from each risk rating category were randomly selected and made available as substitute food businesses. In the event of a refusal or a non-trading food business, a substitute food business was randomly selected and included within the relevant study population.

In order to achieve a sample size that incorporated the above parameters, the minimum number of randomly selected food businesses was 511.

Each randomly selected food business, which formed a sampling unit, was sent an introductory letter by the researcher. The letter explained the purpose of the proposed interview and associated inspection and gave an assurance of confidentiality (see Appendix 82).

Each FBO or a management representative was then contacted by telephone and a mutually convenient time was arranged for the interview and inspection of the food business.

## **2.9 Potential bias in data collection**

An area of concern encountered during the research that could have adversely influenced the validity of the results obtained during the interview and inspection of the food businesses, was the “enforcer / enforced” relationship between the researcher (an authorised Food Safety Enforcement Officer) and the respondents, who had regulatory obligations under the Food Safety Act 1990 and other subordinate legislation. The majority of interactions between the researcher and respondents involved such a relationship.

Therefore when agreeing to take part in the research, the respondents may have been influenced by this relationship and may have knowingly or otherwise implemented improvements within their food businesses in preparation for the interview and inspection.

In order to minimise the potential variance in the findings due to this relationship, the following measures were undertaken:

- i. the introductory letter to the respondents emphasised that they had no obligation to take part in the research;
- ii. an assurance of confidentiality was given to the respondents, both in the introductory letter and by the researcher during the inspection and interview;
- iii. the inspection and interview took place at a time and date that was convenient to the respondent. This approach was deliberately adopted, as it was the opposite approach used in the enforcer / enforced relationship, where the majority of food hygiene inspections are undertaken unannounced.

## **2.10 Obtaining the primary data**

The survey of the randomly selected food businesses of each population involved two components:

1. an in-depth interview with the FBO or management representative. The interview focused on the level of knowledge regarding HACCP based food safety management systems.
2. an inspection of the food business that focused on hygiene prerequisites and the monitoring of generic Critical Control Points (CCPs).

All interviews and inspections were undertaken by the researcher and took place between March 2003 and December 2005.

## **2.11 The design of the Questionnaire**

The objectives of the questionnaire were as follows:-

1. to elicit accurate information from the respondent.
2. to provide a coherent structure to the interview, to allow it to flow in a smooth and logical manner.
3. to provide a template on which facts, comments and attitudes could be recorded.
4. to facilitate data processing of the responses.
5. to assess the level of understanding of HACCP based systems amongst FBOs of SME food businesses within the study populations.
6. to identify and analyse the factors that constrain the implementation of the hazard analysis requirement in SME food businesses of the study populations.

## **2.12 The Questionnaire**

A semi-structured questionnaire was designed for completion during the interview. A semi-structured questionnaire incorporates a mixture of closed questions with a limited range of responses and open questions that leave the respondent free to say anything he / she wishes (Hague, 1998).

Semi-structured questionnaires have a built-in flexibility to accommodate a range of replies. The appropriate use of open-ended questions is useful in teasing out the subtleties that may not surface in closed questions. Semi – structured questionnaires are suitable for face-to-face interviews (Hague, 1998).

The framing of the questionnaire was based on the general principles cited by Hague (1998).

The questions were specifically focused on:

- a. an analysis of Reg 4.(3) compliance (the hazard analysis requirement).
- b. the FBO's / management representative's knowledge, attitudes and beliefs regarding compliance and the constraints that affect compliance within the study populations.

The form of interview used was a face-to-face interview with the FBO or a management representative. The use of face-to-face interviews had two advantages:

- a. a high return rate is achieved.
- b. it establishes a rapport between the interviewer and the respondent which helps to reduce apprehension on the part of the respondent and to maximise the extent of truthful responses (Hague, 1998).

The sequence of questions was set out to follow a logical path in order to assist the thought processes of the respondent.

#### **2.12.1 The focus of the questions**

The questions were based on the literature review undertaken by the researcher and also discussions with the FBOs / managers during the pilot trial regarding the meaning of the individual components of HACCP and its derivatives.

General areas of concern were noted in relation to the implementation of hazard analysis. These areas were:

- i. the terminology used in HACCP/ hazard analysis;

- ii. the finance involved in implementing HACCP/ hazard analysis;
- iii. obtaining appropriate HACCP/ hazard analysis training;
- iv. the lack of useful information regarding HACCP/ hazard analysis;
- v. the lack of practical guidance regarding HACCP/ hazard analysis;
- vi. inadequate knowledge regarding HACCP/ hazard analysis;
- vii. more pressing business priorities e.g. financial and personnel issues
- viii. staff turnover;
- ix. feelings that HACCP/ hazard analysis was a waste of time;
- x. inadequate assistance from the Food Safety Enforcement Officers.

As a consequence of the above, the questionnaire was designed to focus on these areas.

The questions used were drafted in order to meet two objectives:

- 1. ensuring that the questions were understood by the recipient in the way intended by the interviewer / researcher;
- 2. to significantly restrict the different ways the recipients could interpret the questions.

Clarity in the wording of questions can be achieved by compliance with a set of simple rules (Hague and Jackson, 1995). This guidance was implemented in the wording of the questions used in the questionnaire, which were designed to be without bias, concise, specific and within the respondent's capabilities.

In order to facilitate an effective interview process two small pilot trials were undertaken. During the pilot trials, the exact wording of the components of Reg 4.(3) contained in the legislation was generally found to be ambiguous by the majority of respondents. In response, at the pre-testing stage, such words were removed and substituted with wording that was more easily understood by the respondents.

In the closed questions, an option of "other" was included among the possible responses. In order to quantitatively assess the "other" responses, the specific subject was noted on each individual questionnaire. Such responses are often under reported (Hague, 1998).

### **2.12.2 Protocol used for asking the respondent questions**

A recognised protocol for face-to-face interviewing was used during each interview based on the principles used by the Institute for Social Research of the University of Michigan (University of Michigan, 1976).

The questions were asked exactly as they were worded in the questionnaire. Where necessary neutral probing techniques were used to encourage the respondent to answer the question. These techniques included the following:

i. Repeating the question

Such a method is considered to be an effective method of neutral probing.

ii. Use of an expectant pause

The use of silence or a pause can be an effective cue to the respondent that a complete response is required.

iii. Repeating the respondent's reply

Respondents are often stimulated to make further comments on hearing their thoughts repeated

iv. The use of reassurance to the respondent

The use of reassurance can assist respondents who are hesitant.

v. Asking for further clarification

This can stimulate the respondent's desire to cooperate with the interviewer (Kinnear and Taylor, 1987).

### **2.12.3 The pilot trials for the Questionnaire**

During the trials the questionnaire was pre-tested and underwent revisions from its original form. The trials took place in January and February 2003.

Face to face interviews were used for pre-testing the questionnaire during its redrafting. The interviewer noted any difficulties with the respondents' understanding of the questions. The sequence of the questions was also pre-tested.

For the results of the pilot trials to be meaningful the number of food businesses randomly chosen was 15, in approximately the same ratio as they occurred in the

respective populations. The numbers of businesses randomly selected from the A, B and C categories were 1, 5 and 9 respectively.

The food businesses randomly selected for the pilot trial were excluded from the main study. This was in order to ensure that the effect of prior knowledge of the question sequence and content did not impact on the results obtained during the research. The FBOs or management representatives of food businesses selected for the pilot trial were contacted and their permission sought regarding inclusion in the trial.

All of the respondents in the first phase of the pilot trial understood the meaning of all of the set questions with the exception of the questions relating to the components of Reg 4.(3). The questions used in this first phase replicated as closely as possible the actual wording used in Reg 4.(3).

In response to this ambiguity, and after further discussions with the respondents, the questions relating to Reg 4.(3) were refined and redrafted with the objective of simplifying the wording, but retaining an identical meaning as far as was practicable.

The second phase involved further refinement and simplification, and these modifications were included in the final questionnaire (see Appendix 83).

### **2.13 Design of Premises Inspection Checklist**

The objectives of the Food Premises Inspection were threefold:

1. To assess the presence of the relevant food hygiene prerequisites within the food businesses forming the study populations. Hygiene prerequisites are the essential components that must be in place at an acceptable level for a food safety management system to function effectively (Engel *et al*, 2001).
2. To assess the identification of generic critical control points (CCPs) and the related documentation for the monitoring of CCPs.
3. To determine the level of current compliance with Reg 4.(3) under 4 broad categories based on analysis of food safety hazards and implementation of appropriate controls. These categories are described below.

## **2.14 Compliance with Regulation 4.(3) – the hazard analysis requirement**

The methodology used in this research to assess Reg 4.(3) compliance used two criteria. The first was an analysis of the five individual components of Reg 4.(3). The second involved an assessment used by the Local Authorities Co-ordinating Body on Food and Trading Standards (LACOTS). The differing assessment criteria produced similar outcomes.

LACOTS considered Reg 4.(3) as two distinct components i.e. analysis and implementation. Analysis is defined as *“the systematic approach or process that the food business operator should undertake to identify food safety hazards, the appropriate controls and the monitoring that must be implemented to eliminate or reduce the food safety hazards to an acceptable level”* (LACOTS, 1997).

Implementation is defined as *“the implementation of effective controls at critical points”* (LACOTS, 1997).

A food business was considered by LACOTS to be non-compliant in the following circumstances:

Analysis: No; Implementation: No

A situation that is dangerous due to the absence of both a systematic approach to food safety hazards and the implementation of appropriate controls and monitoring at critical points (LACOTS, 1997).

Analysis: Yes; Implementation: No

A situation that is dangerous and results from where the controls and monitoring identified by a satisfactory analysis have not been implemented (LACOTS, 1997).

Analysis: No; Implementation: Yes

A non-compliance situation where effective controls are in place, perhaps with acceptable monitoring procedures. Non-compliance arises because the controls in place are not based on a systematic analysis.

LACOTS made no judgement on whether this situation is dangerous (LACOTS, 1997). This research will argue that the objectives of food safety will largely be achieved within SME food businesses if this criterion is fulfilled.

A food business was judged by LACOTS to be compliant in the following circumstance:

Analysis: Yes; Implementation: Yes

Where there are both analysis of food safety hazards and implementation of appropriate controls, together with monitoring of the food business operations (LACOTS, 1997).

### **2.15 The Intervention Project**

In order to investigate the validity of hypothesis 3:

*“That a regulatory model based on cooperation between the enforcing authority and the FBO utilising simple guidelines is more effective than a punitive approach for the successful implementation of hazard analysis,”* an Intervention Project was devised and implemented by the researcher.

The project was undertaken between February and August 2006.

In terms of food safety, high risk food businesses were identified as those food businesses within the A and B risk rating categories.

The starting point of the project was to identify all category A and B food businesses with high risk rating scores in one or more of the following: food hygiene and safety, structural compliance and confidence in management as set out in the Food Safety Act 1990 COP. In addition all “*start up*” food businesses registered with the LBC and risk rated A or B were also invited to attend as firms are more receptive to a regulatory input during the start-up stage of their life cycle (Kingston and Howlett, 2001).

At the time of the Intervention Project, the LBC had 274 registered category A and B risk rated food businesses. This figure excluded those food businesses that were subject to Approval under EC Regulation 853/2004 and those which were in the B risk rated category solely due to the COP requirement to assign the additional score to a defined method of processing. Also excluded were hospitals and institutions which had a food safety management system in place but received an additional risk score under the COP for providing food to vulnerable persons.

Prior to the Intervention Project, the vast majority of Category A and B food businesses in Camden were not complying with Article 5 of EC Regulation 852/ 2004 and did not operate a complete hazard analysis or an equivalent HACCP based system. This accords with the findings of the research undertaken by the Department of Trade and Industry that small businesses had ambiguity regarding the expectations that the regulators had of them (Department of Trade and Industry (DTI), 2002).

Further research undertaken by the Small Business Research Trust found that 50% of small businesses which sought advice on their regulatory obligations, could not locate it (Small Business Research Trust, 2003). Hampton (2005) found that 92% of businesses involved in his consultation required more advice from regulators in areas of unclear or uncertain interpretation.

At the time of the Intervention Project all food authorities within England and Wales were required to promote the Food Standards Agency's Safer Food Better Business system to all food businesses (see Chapter 1:5:3). The Safer Food Better Business campaign was well publicised and a decision was made by the researcher to exploit the wave of publicity generated by this campaign and incorporate the central components, known as the 4 Cs, into the Intervention Project.

A coaching pack was designed to address the constraints identified by the research. In order to minimise the financial constraint on food businesses, the coaching sessions were offered at no cost and the FBO and up to two persons from each food business were invited to attend. The package was based on the 4Cs and a 5<sup>th</sup> C - the consequences of non-compliance.

The measures required for the prevention of food poisoning were an important element of the coaching sessions. It can be argued that FBOs do not want to produce food that results in food poisoning when consumed. However, according to Fairman and Yapp (2004) this desire is based on a financial rather than a moral basis. This creates an interesting paradox with food businesses committed to safety – albeit not for moral reasons - but being unwilling to invest financial resources on the assumption that such an input would be unprofitable.

In January 2006, a list of all registered food businesses risk rated A or B was extracted and compiled from the Food Registration Database. Dates were set for coaching sessions and letters were sent out to all FBOs. In order to minimize the administrative effort of organising the events, FBOs were informed of the venue, time and date and were not offered alternative dates. The tone and content of the letter inviting FBOs to attend the free coaching session was set out in a manner which explicitly stated the need for the FBO to attend and the potential consequences of non-compliance with the HACCP based requirement (see Appendix 85).

Thirteen coaching dates were organised; the attendee group sizes ranged from 5 to 11, depending on the size of the venue available for the coaching and the number of FBOs / managers who chose to attend on that specific date.

Of the 274 FBOs invited to the coaching sessions, 190 expressed an interest in attending. Of those 190 FBOs, 92 attended the coaching sessions. This was an attendance rate of 34% of the entire A and B populations and 48% of FBOs who had previously expressed an interest in attending the coaching sessions. For reasons given in (Chapter 3.21.1), 78 food businesses attended the coaching session and also received a coaching visit.

#### **2.15.1 The coaching session**

The coaching session was two and a half hours in length and focused on the following:

- The new Food Hygiene Regulations and the HACCP based food safety management system requirement.

- The essential hygiene prerequisites - emphasis was given to the prerequisite shortcomings identified in the research.

Also included in the coaching sessions was the essential documentation required to demonstrate minimum compliance with Article 5 of EC Regulation 852/2004 requiring a HACCP based system. The consequences of non-compliance were also discussed.

A PowerPoint presentation devised by the researcher was used throughout the coaching sessions. A set of paper-based exercises was incorporated into the training, allowing time for discussion and debate amongst the attendees (see Appendix 86). The exercises explored different food safety scenarios and the essential remedial measures expected if a HACCP based system was in operation. The solutions provided by the FBOs were discussed with the attendees, a FSO from the Food Team, and the researcher who led the coaching sessions.

In order to address the constraint of time in relation to implementing a HACCP based system, each attendee was provided with a coaching pack. The pack contained monitoring sheets that covered the generic CCPs relating to cooking, hot and cold holding and display, cleaning, training and supervision of food handlers (see Appendix 87). A simplified generic food safety management document, which could be adapted to an individual food business, was also included (see Appendix 88). The regulatory obligation of the FBO to complete and retain such documentation was specifically emphasised during the sessions. Following the coaching session the FBOs were strongly advised to use / adapt the monitoring and record sheets provided as templates for use within their individual food businesses.

In order to lessen the constraint of the lack of practical guidance the researcher and a FSO from the Food Team delivered the coaching. These officers were known to the majority of FBOs and intentionally tried to build a supportive relationship with the FBOs outside that of the traditional enforcer / enforced relationship. However, the FBOs were made aware that minimum legal compliance was expected and the legal consequences of non-compliance were explained.

At the end of the coaching session the FBOs were provided with light refreshments and were encouraged to exchange views with the other FBO attendees and with the trainers who ran the coaching session. The FBOs were also given the contact details of the designated FSO who would provide support and were invited to contact them for further information and advice.

The provision of information in the form of a coaching pack comprising simple records, monitoring sheets and a generic simplified food safety management system was provided as these could be effective information tools for the FBOs and food handlers. It was essential that the information and guidance were set, where practicable, at the appropriate reading age of the intended recipients. It is known that the general standard of reading amongst persons in control of SMEs is not high (Ferguson *et al*, 2003). Research undertaken in the field of health and safety showed a correlation between the increasing reading age used in documentation and increasing difficulties in comprehension. Written information designed for a reading age of 9 years was easily understood whereas written information set at those with a reading age of 15 was classified as difficult. Written information set at the lower reading age was found to be acceptable to those with a higher reading age (Ferguson *et al*, 2003).

This research found that time and resources were prime concerns of SMEs. Therefore the Intervention coaching sessions were designed to be of approximately 2 hours 30 minutes duration and the information provided was short and concise. This mode of delivery was used because information that does not gain immediate attention can be lost forever (Gervais, 2006). SMEs focus on core business issues, including remaining compliant (COI, 2003). Therefore the information provided focused on minimum legal compliance with HACCP based systems. The ethos behind the Intervention Project focused on the control of the generic CCPs within a food business with reduced emphasis on the analysis of food safety hazards. In terms of food safety, from the results of this research, the control and monitoring of generic CCPs were considered to be more effective in achieving food safety than giving the analysis of food safety hazards an equal status.

Approximately 28 days following the coaching session, mutually agreed appointments were made with the attendees and single coaching visits were undertaken by the

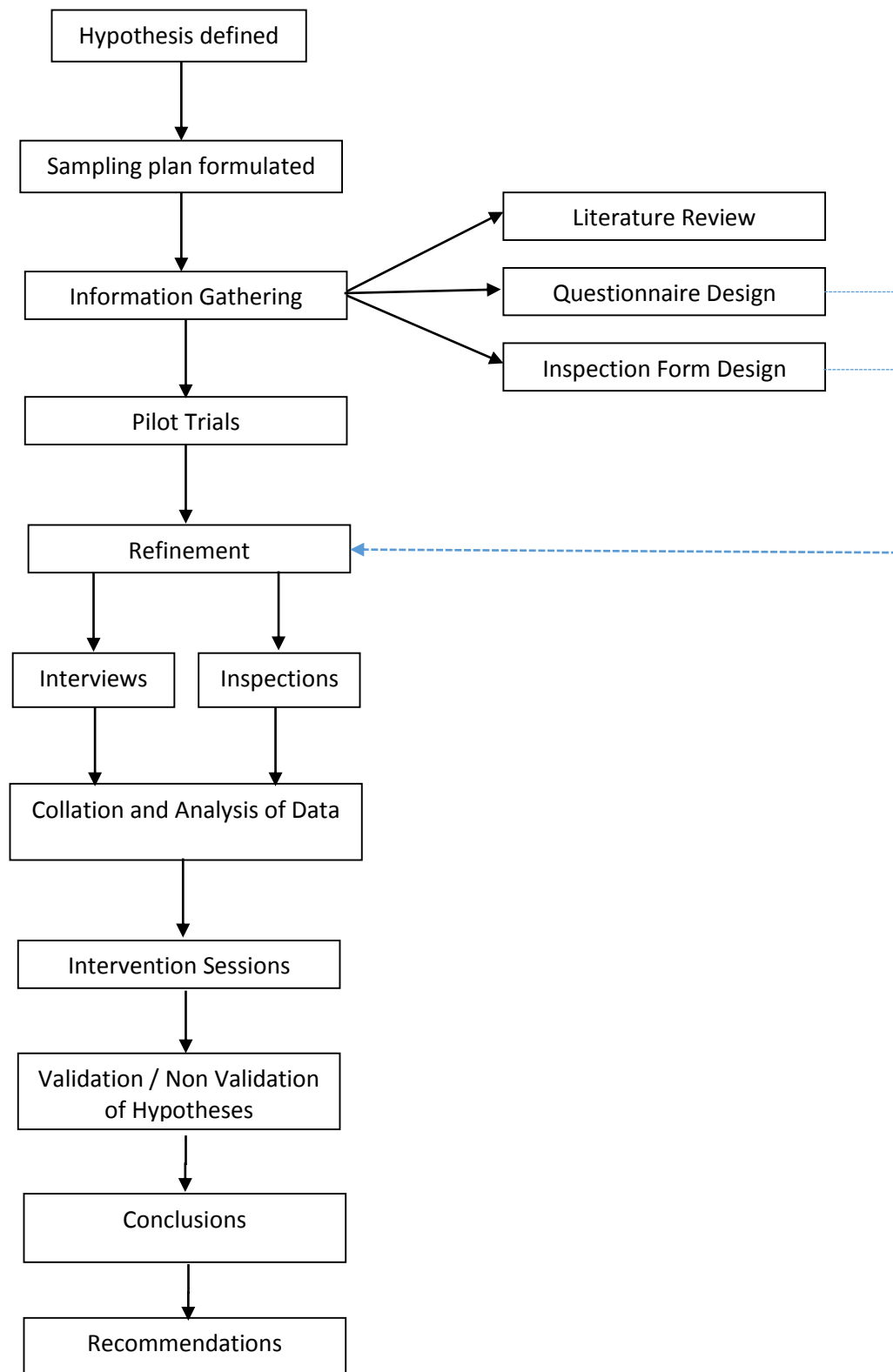
researcher. The objective of the coaching visit was to provide help and assistance in monitoring the generic CPs / CCPs and in completing the related HACCP based documentation.

To assist FBOs in identifying areas where control measures should be implemented, concise signage prompts written in both English and the main language of communication of the food handlers were provided at no cost to the FBO. During the coaching session the researcher, working in conjunction with the FBO, jointly identified the points, areas or stages of food preparation where control measures were needed in order to assure food safety. Signage prompts were also positioned in the changing areas used by food handlers. The signage prompts, laminated within plastic covers which allowed for effective cleaning, were positioned at such locations as to act as aide memoirs to food handlers, focusing their attention towards relevant food safety control measures (see Appendix 89).

## 2.16 Stages of the research

The research was undertaken in sequential stages as shown below:

Figure 1. Stages of the Research



# **Chapter 3**

## **Results**

## **CHAPTER 3**

### **3.0 RESULTS**

*This section contains the characteristics of the study populations in terms of the types of food businesses and the ethnicity and main spoken language of the FBOs. It assesses the extent of food hygiene training and supervision of food handlers.*

*This section also presents the results of the assessment of relevant hygiene prerequisites found within the food businesses of the study populations.*

*It includes a quantitative analysis of Reg 4.(3) in terms of the extent of regulatory compliance and the awareness and understanding of compliance with the requirement. It further contains a quantitative and qualitative assessment of the constraints that hindered Reg 4.(3) compliance.*

*It defines the main motivators of Reg 4.(3) compliance amongst the FBOs of the study populations and assesses the extent of compliance using the criteria set out by LACOTS.*

*Finally the evolution, stages and results of the Intervention Project are discussed.*

#### **3.1 The types of food businesses forming the study populations**

The random selection process used in the sampling scheme produced a range of food business types for data analysis (see Figures 1, 2 and 3 and Appendices 1, 2 and 3). These are graphically represented below.

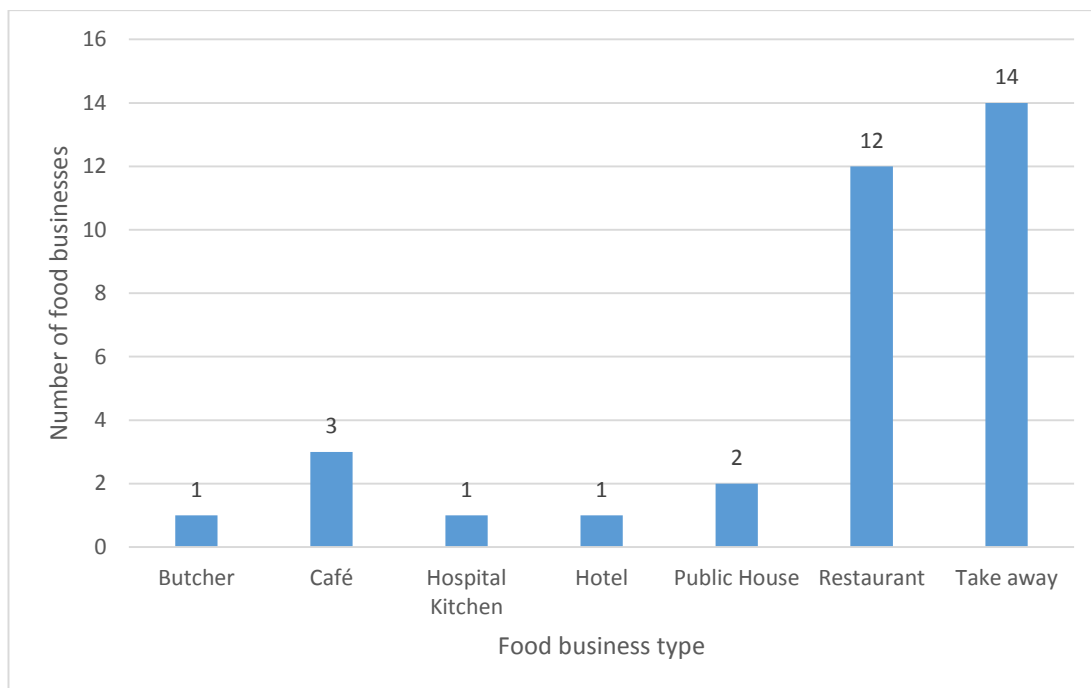


Figure 1. Types of A risk rated food businesses

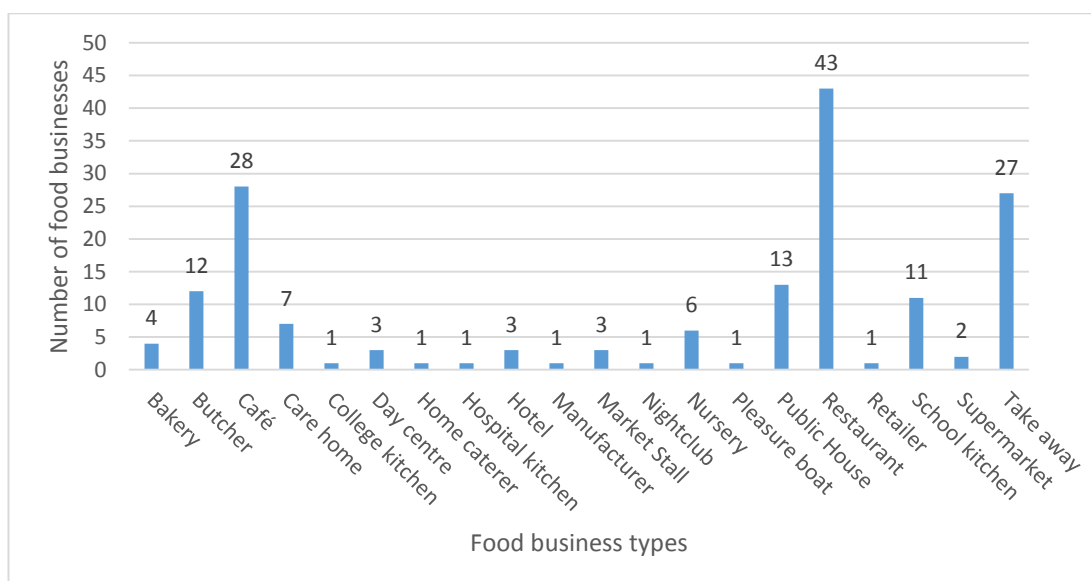


Figure 2. Types of B risk rated food businesses

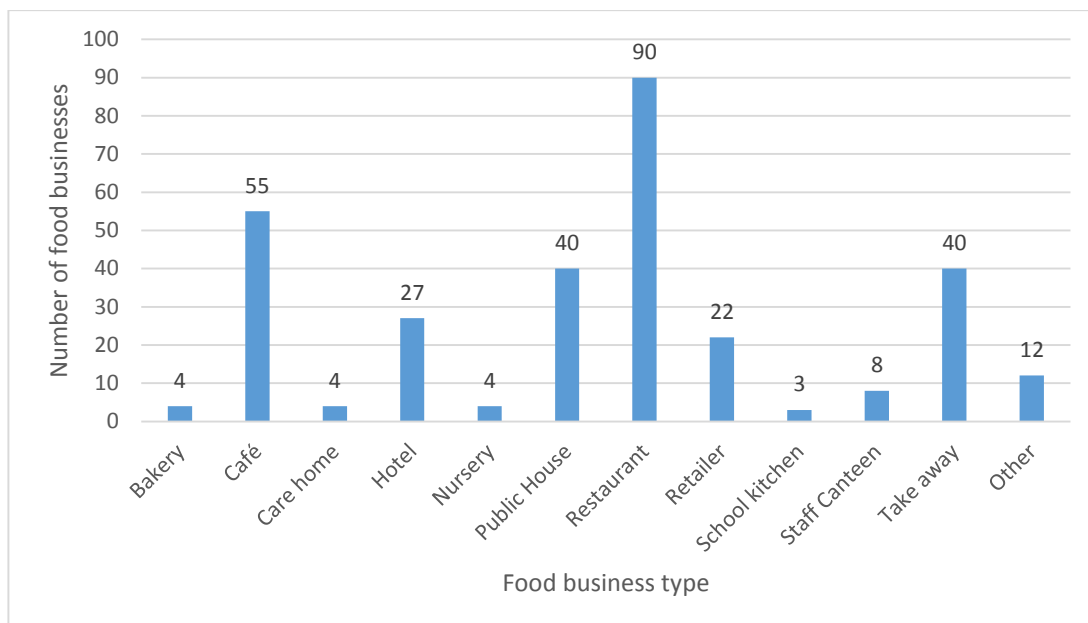


Figure 3. Types of C risk rated food businesses

The predominant food business types within the study populations were restaurants, take away outlets and cafes. The predominance of such food businesses was significant to food safety as they generally had wide-ranging menus, which typically included high-risk foods. Food preparation, including cooking, commonly occurred in a single main food preparation area. In terms of food preparation, peaks of activity generally occurred at set times of the working day – early mornings, lunchtimes and evenings. During such peak periods, safe food preparation procedures could be placed under pressure due to the high throughput required in the service of customers. Food handlers were often required to carry out several tasks simultaneously, including cleaning and dealing with customers.

### 3.2 Ethnicity of FBOs

There was a wide spectrum of ethnicity of FBOs within the study populations (see Figure 4 and Appendix 4).

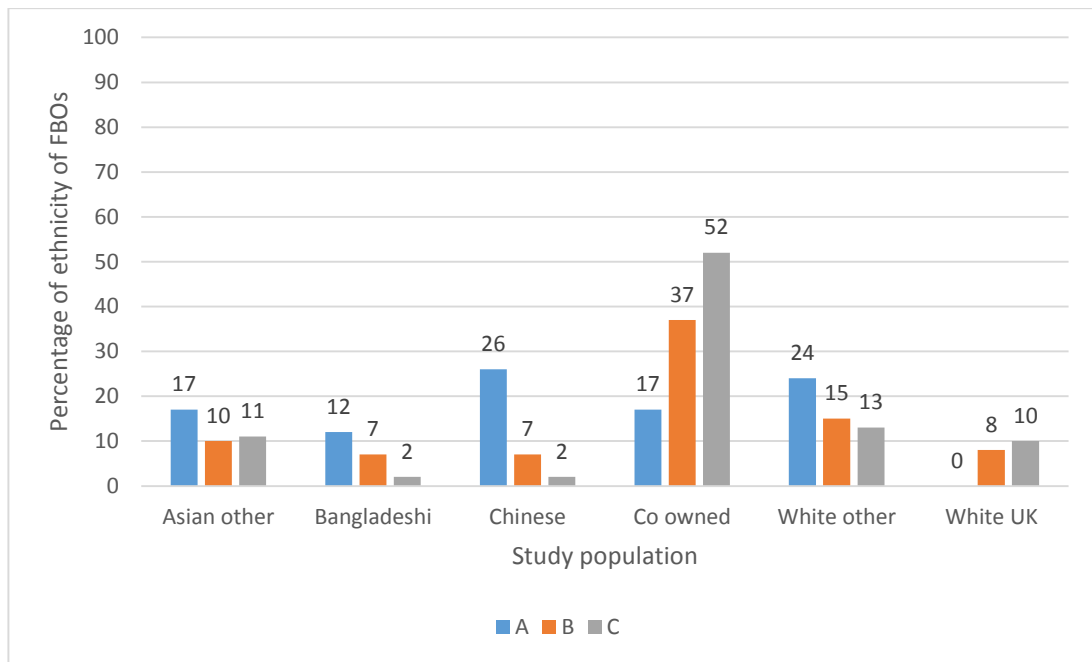


Figure 4. Ethnicity of FBOs in study populations

### 3.3 Main spoken language of FBO / management representative

Within the study populations the predominant language of communication was English (see Figure 5 and Appendix 5).

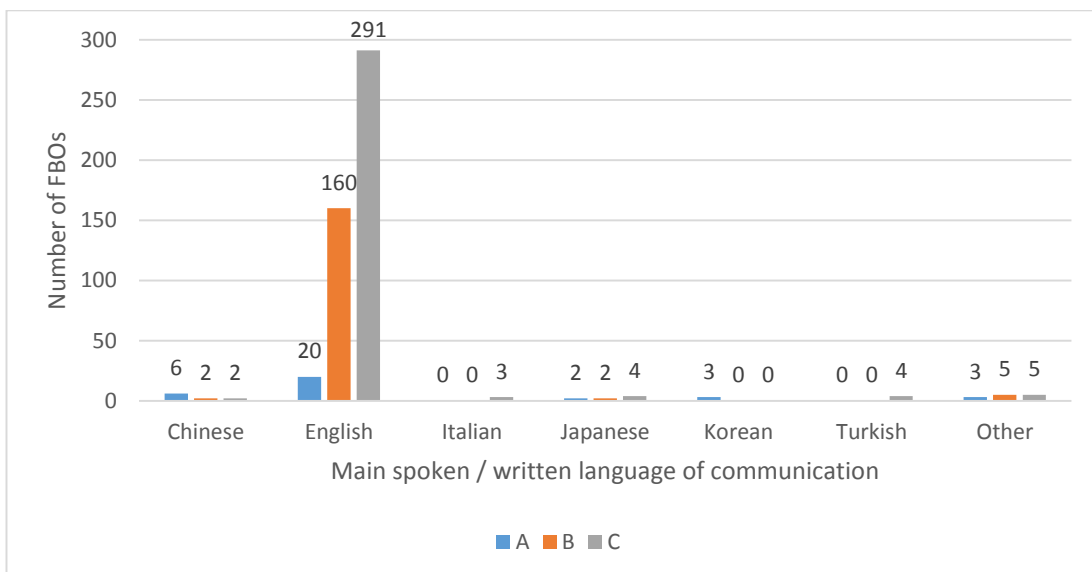


Figure 5. Main spoken / written language of FBOs

### 3.4 Food hygiene training qualifications of FBOs / managers

Within the study populations a large majority of FBOs / managers were in possession of Level II (Foundation) food hygiene certificates. The number of FBOs / managers in possession of Level III or above (Intermediate or Advanced) was significantly lower in all risk rated categories (see Figure 6 and Appendices 6 &7).

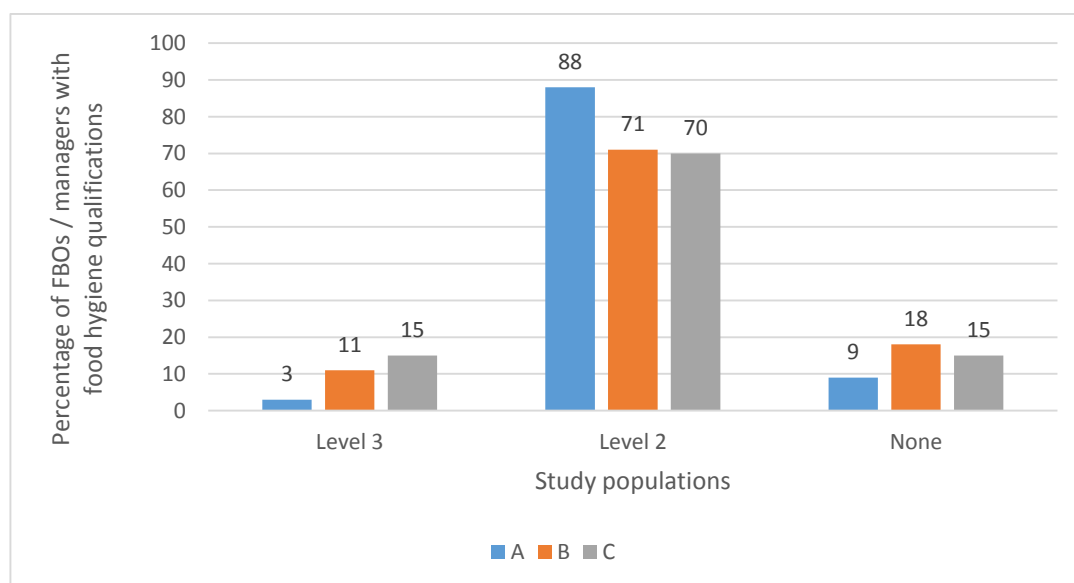


Figure 6. Food hygiene qualifications of FBOs / managers

### 3.5 Food hygiene training qualifications of food handlers

Within the food businesses of the study populations the majority of food handlers were in possession of Level II food hygiene qualifications (see Figure 7 and Appendix 8). However, in each risk rating category there were significant numbers of food handlers who lacked this qualification.

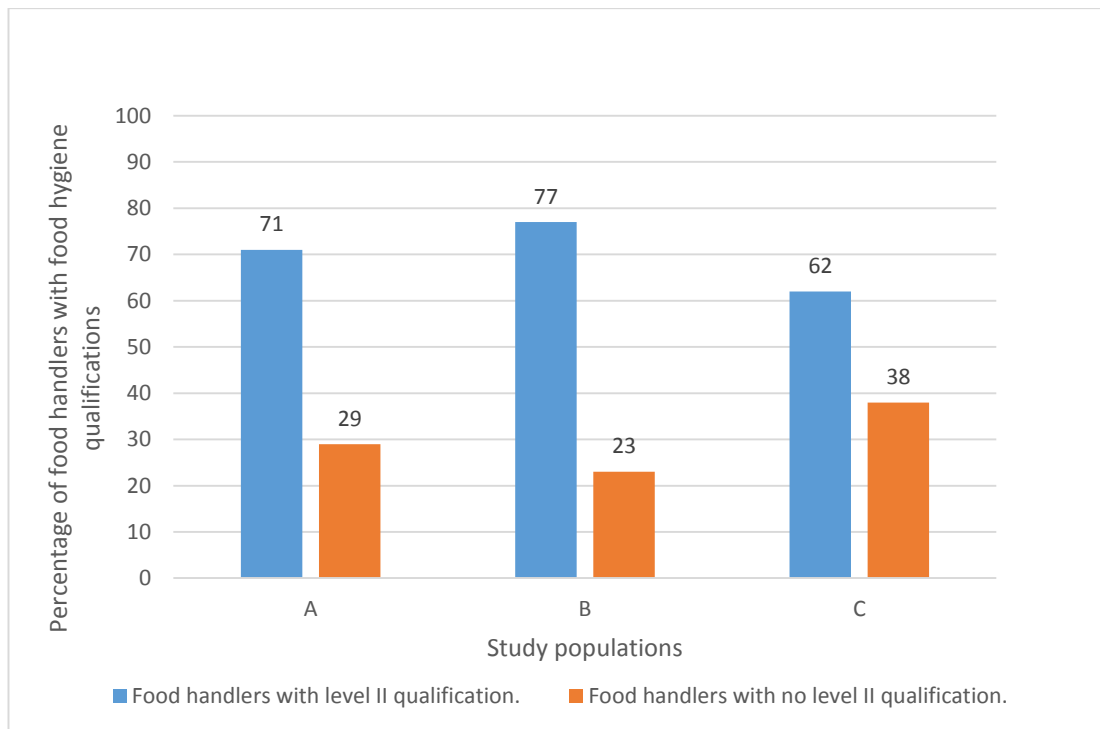


Figure 7. Percentage of food handlers with Level II food hygiene qualifications

### 3.6 Supervision of untrained food handlers who did not possess a Level II food hygiene certificate

A significant number of untrained food handlers were not effectively supervised whilst handling or preparing food (see Figure 8 and Appendix 9).

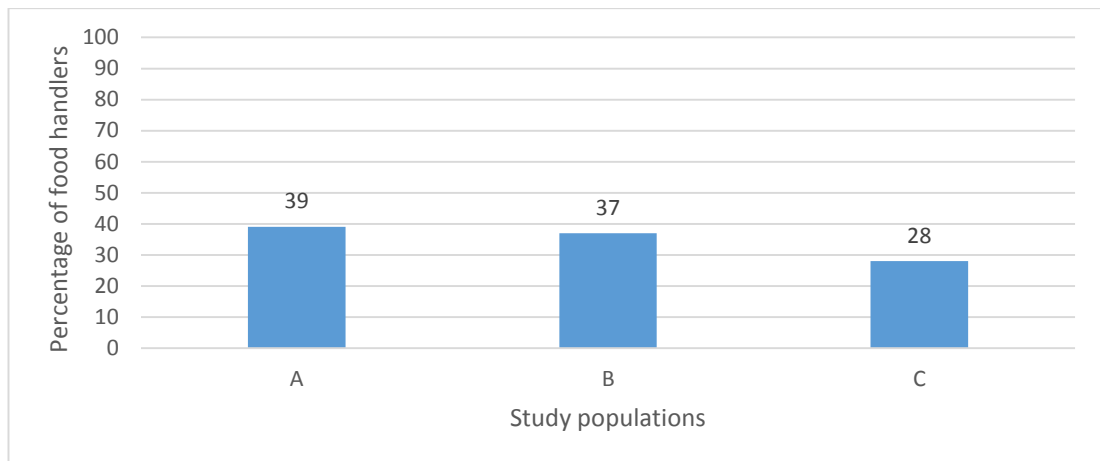


Figure 8. Percentage of food handlers without Level II food hygiene qualifications who were not supervised

### 3.7 Knowledge of food safety legislation applicable to the FBOs / management representative

The knowledge of FBOs / managers with regard to relevant food safety legislation within the study populations was poor (see Figure 9 and Appendix 10).

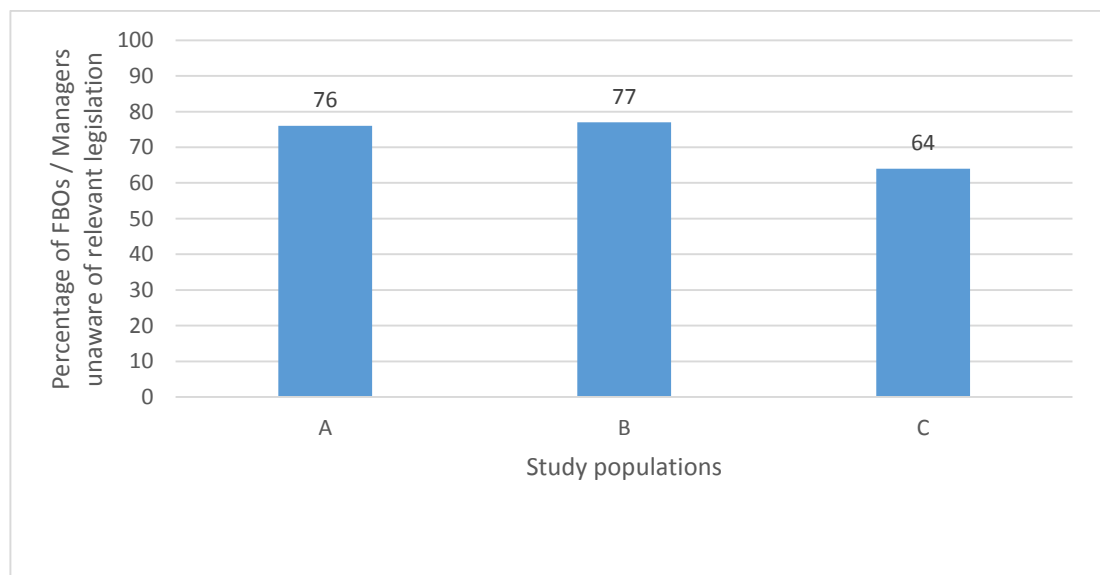


Figure 9. Percentage of FBOs / managers who were unaware of any form of relevant food hygiene legislation

### **3.8 Main findings from food premises inspections**

The objectives of the food premises inspections were as follows:

1. to quantitatively assess the presence of food hygiene prerequisites within the food businesses forming the study populations.
2. to quantitatively assess the identification of critical control points (CCPs) and related documentation for the monitoring of CCPs within the food businesses of the study populations.
3. to determine the level of compliance with Reg4.(3) under 4 broad categories based on the analysis of food safety hazards and implementation of appropriate controls.

Hygiene prerequisites are the essential components that must be in place for a food safety management system to function effectively (Engel *et al*, 2001). The following hygiene prerequisites were quantitatively assessed during the food premises inspections and are set out below under general headings:

- i. adequate structural condition and layout of the food premises;
- ii. effective cleaning and disinfection of hand and food contact surfaces;
- iii. good personal hygiene of food handlers;
- iv. effective pest control procedures within food premises;
- v. adequate training and supervision of food handlers.

### **3.9 Assessment of the hygiene prerequisites**

#### **3.9.1 Suitability of the external structure of premises**

The suitability of the physical structure of food premises within all risk rated categories was not found to be a significant issue, the condition of external structures being generally sound and weatherproof (see Appendix 11).

### 3.9.2 Suitability of the internal structural repair of food rooms

The internal structural repair which facilitated hygienic food preparation in food rooms / food storage areas was found to be satisfactory in the majority of food businesses (see Figure 10 and Appendix 12).

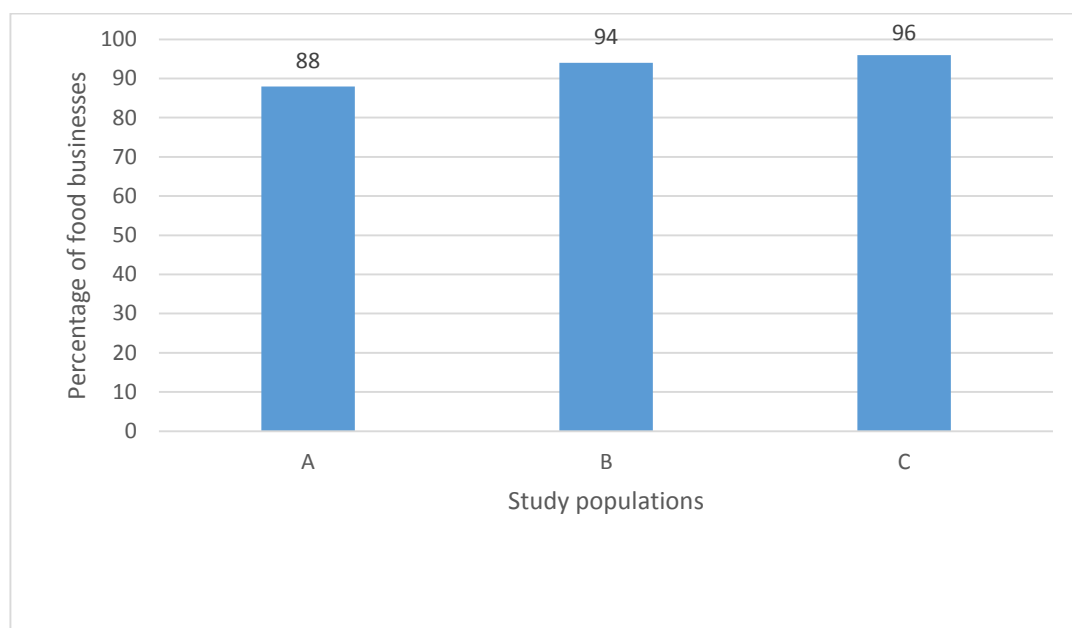


Figure 10. Food businesses with satisfactory internal structural repair

### 3.9.3 The structural cleanliness of food premises

The general cleanliness of the internal structure comprising floors, walls, ceilings, doors and windows of food rooms / food storage areas was found to be unsatisfactory in nearly a quarter of the A risk rated category (see Figure 11 and Appendix 13).

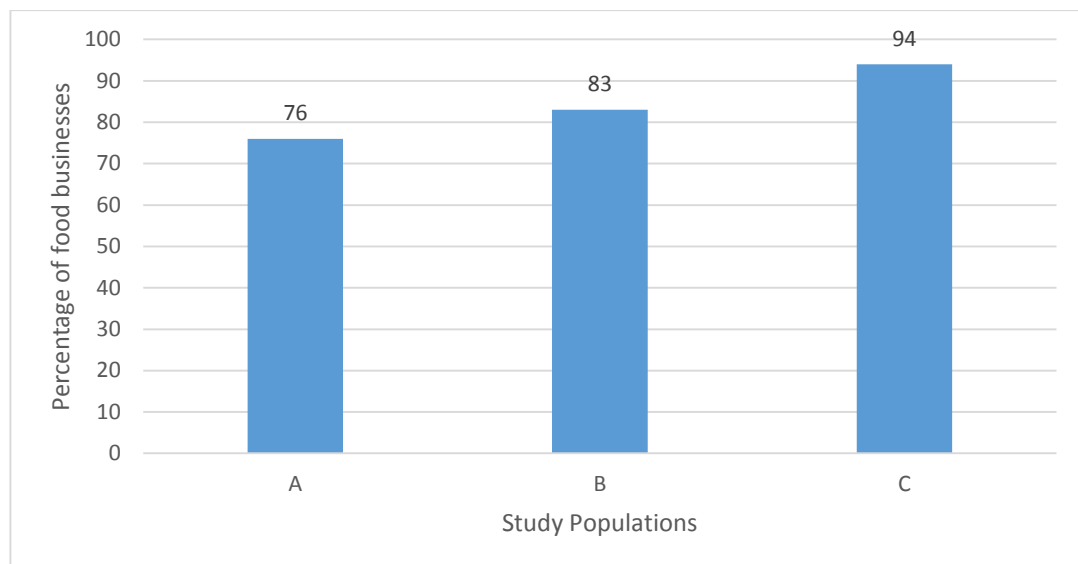


Figure 11. Percentage of food premises with satisfactory standards of internal structural cleanliness

### 3.9.4 Suitability of internal layout for hygienic food preparation

Inadequate internal layout of food premises could expose food to risk of contamination in terms of the routes travelled by food, food handlers, equipment and waste products during the food production process. Almost half of the A risk rated businesses were found to have inadequate internal layout (see Figure 12 and Appendix 14).

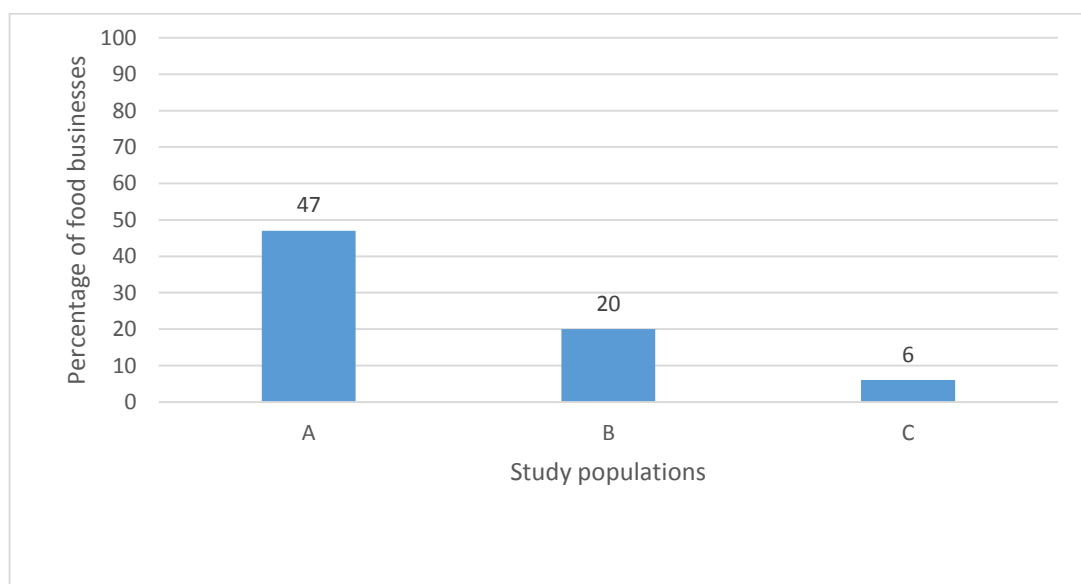


Figure 12. Percentage of businesses with unsuitable internal layout for hygienic food preparation

### 3.9.5 Adequacy of space for hygienic food preparation

Inadequate space for hygienic food preparation was found in a significant number of food businesses in all risk rated categories. Within such premises, spatial restrictions resulted in inadequate separation of raw foods from cooked and ready-to-eat foods. Such inadequate spatial arrangements created risks of food cross contamination (see Figure 13 and Appendix 15).

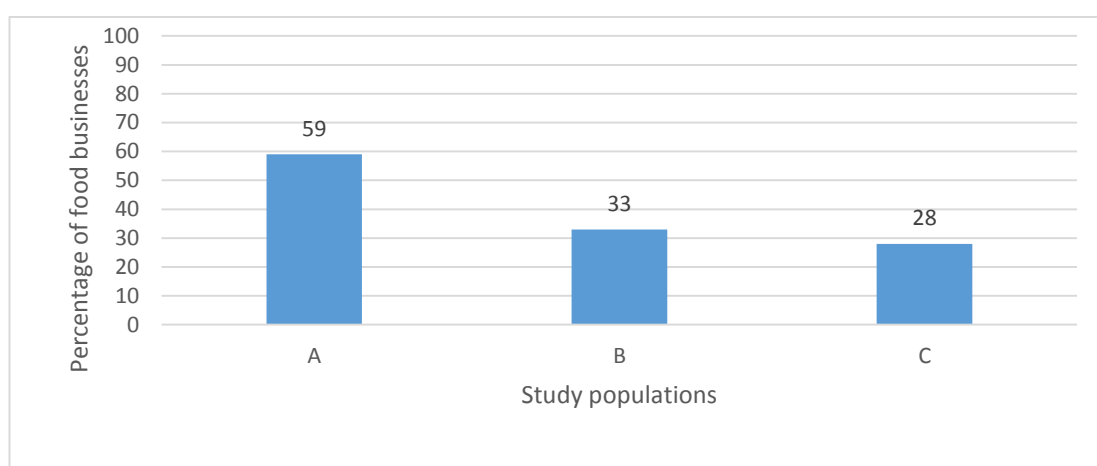


Figure 13. Percentage of food businesses with inadequate space for hygienic food preparation

### 3.9.6 The presence of wash hand basins with hot / cold water supply and soap in or near food preparation rooms

The inspection was confined to the presence / absence of functioning wash hand basins in food rooms where raw, ready to eat, cooked or high-risk foods were prepared. Examples of inadequate wash hand facilities were found within all risk rated categories (see Figure 14 and Appendix 16).

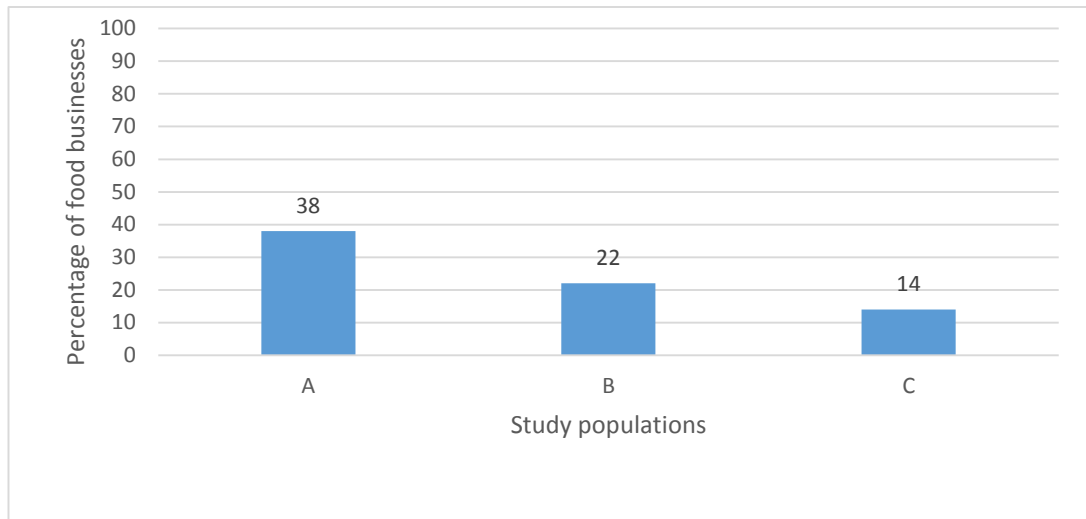


Figure 14. Percentage of food businesses with inadequate wash hand facilities

### **3.9.7 Adequacy of food preparation surfaces (excluding chopping / cutting boards)**

Surfaces that come into direct contact with foods can be a source of cross contamination if their use is not effectively controlled. The avoidance of cross contamination is dependent upon the correct use of food preparation surfaces. Within each risk rated category there were food businesses exhibiting inadequate separation of different food groups such as raw, cooked and ready-to-eat foods during their preparation (see Figure 15 and Appendix 17).

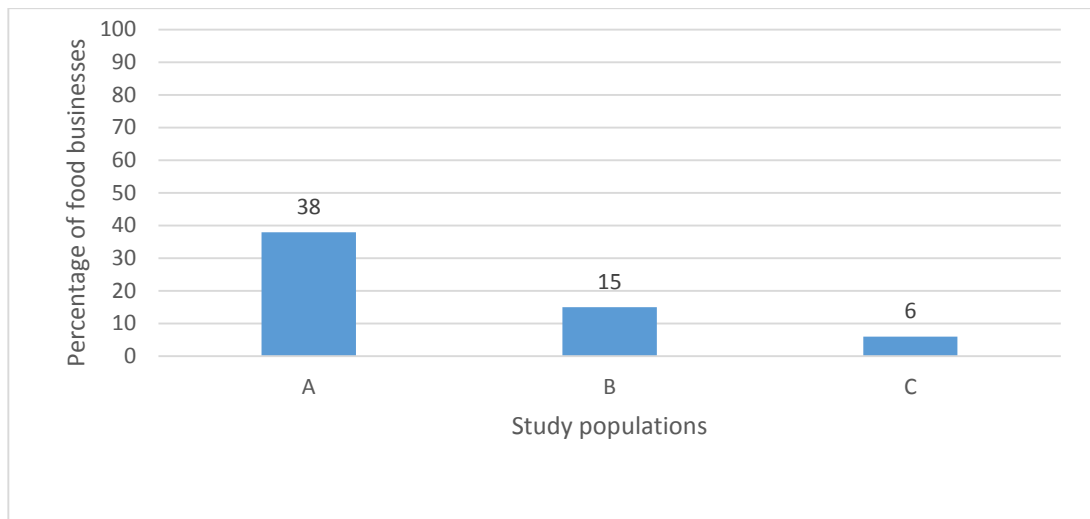


Figure 15. Percentage of food businesses with inadequate food preparation surfaces

### 3.9.8 The use of chopping / cutting boards for food preparation

Chopping / cutting boards were used in the majority of food businesses in all risk rated categories (see Figure16 and Appendix 18).

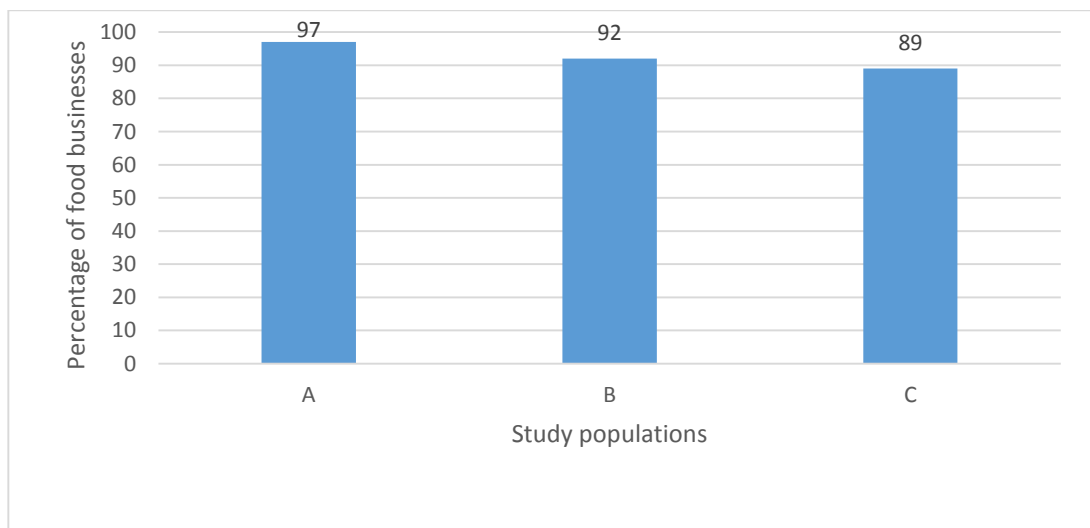


Figure 16. Percentage of food businesses that used chopping / cutting boards for food preparation

### 3.9.9 Hygienic condition of chopping / cutting boards

Within the food businesses that used chopping / cutting boards, examples of visible contamination in the form of dirt, grease and food debris on food contact surfaces were present in all risk rated categories (see Figure 17 and Appendix 19).

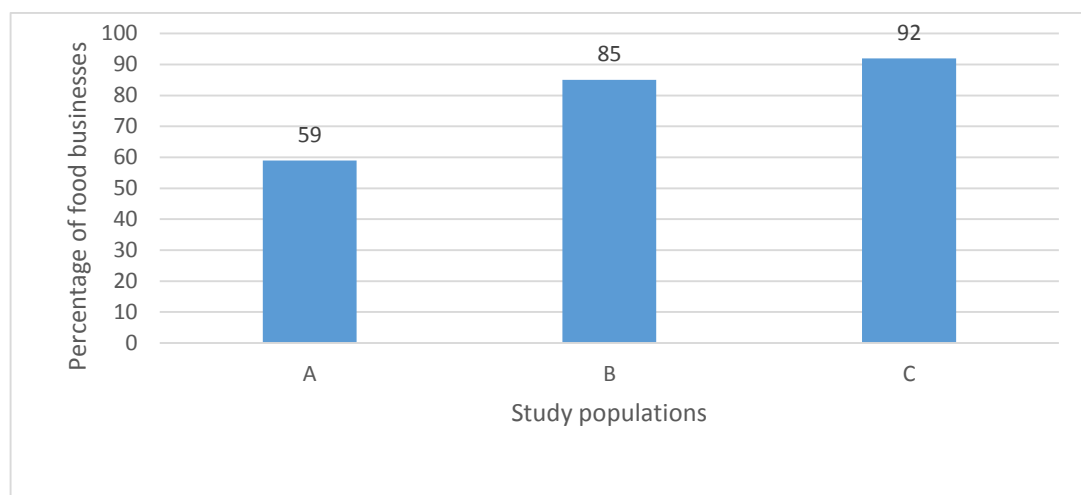


Figure 17. Percentage of chopping / cutting boards without visible contamination

### 3.9.10 Incorrect use of chopping / cutting boards

There were examples in the all risk rated categories that chopping / cutting boards were being used for both the preparation of raw and high risk foods without effective cleaning and disinfection between uses (see Figure 18 and Appendix 20).

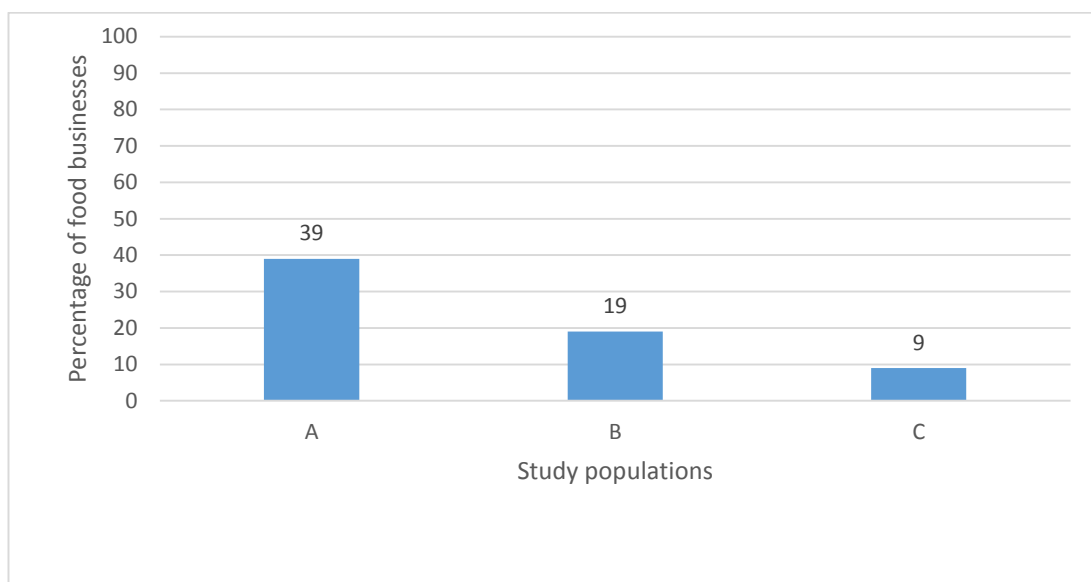


Figure 18. Percentage of incorrect use of chopping / cutting boards

### 3.9.11 Visible cleanliness of utensils in use during food preparation

Food utensils with visible contamination in use during food preparation were found only in a minority of food businesses (see Figure 19 and Appendix 21).

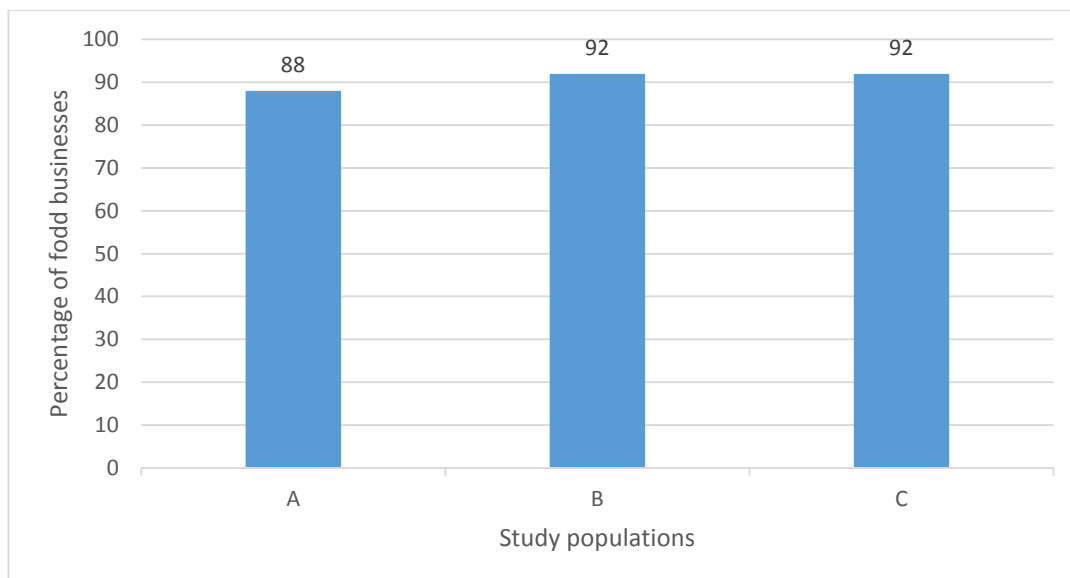


Figure 19. Percentage of food businesses without visible contamination on utensils in use during food preparation

### 3.9.12 Inadequate personal hygiene of food handlers

Investigating this issue involved observation of food handlers during food handling activities and questioning by the researcher, which focused on:

- i. the cleanliness of food handlers' hands;
- ii. effective use of waterproof dressings to cover cuts and lesions;
- iii. evidence of smoking, eating or drinking within food rooms;
- iv. covering of food handlers' hair;
- v. presence of jewellery;
- vi. overclothing being worn by food handlers.

Almost a quarter of food handlers in the A risk rated category exhibited an unsatisfactory standard of personal hygiene (see Figure 20 and Appendix 22).

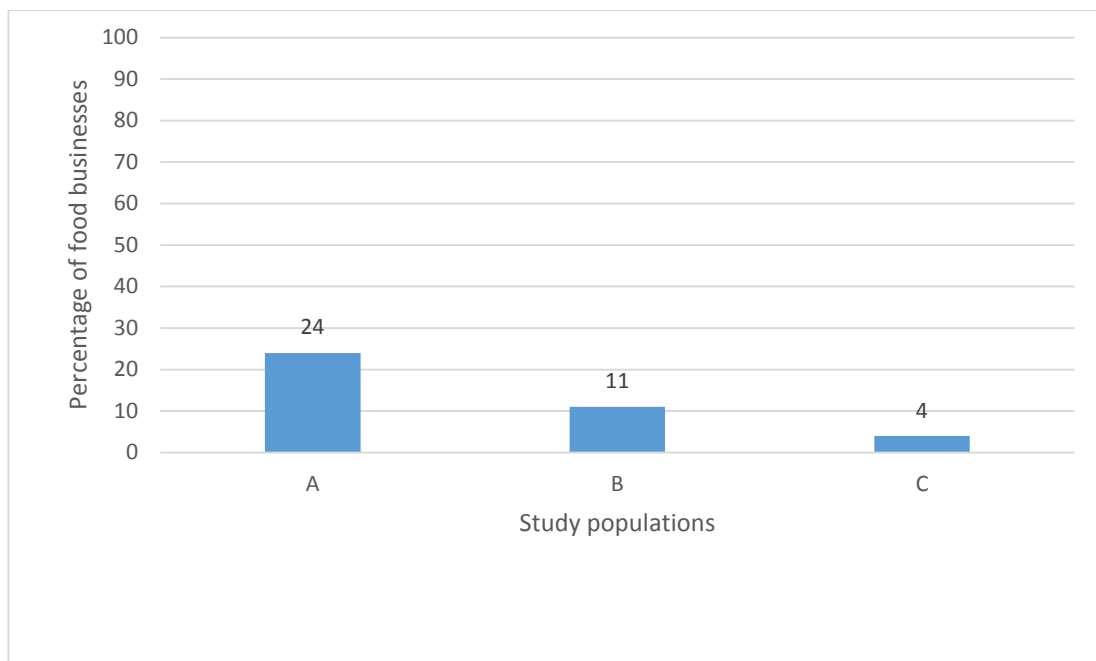


Figure 20. Percentage of food businesses with inadequate personal hygiene of food handlers

### 3.9.13 Arrangements for reporting sickness and the exclusion of food handlers

Food handlers who are suffering from diseases that can be transmitted through food or from certain other conditions such as skin infections and certain bronchial conditions can contaminate food. Foodborne infections can readily be carried by various vehicles of infection, such as the hands of food handlers. There is a legal requirement for food handlers who suffer from such conditions to report them to their employers / managers. Where necessary such food handlers should be excluded from food handling until fully recovered from such conditions. There were inadequate arrangements for reporting foodborne illness in a significant number of food businesses within all risk rated categories (see Figure 21 and Appendix 23).

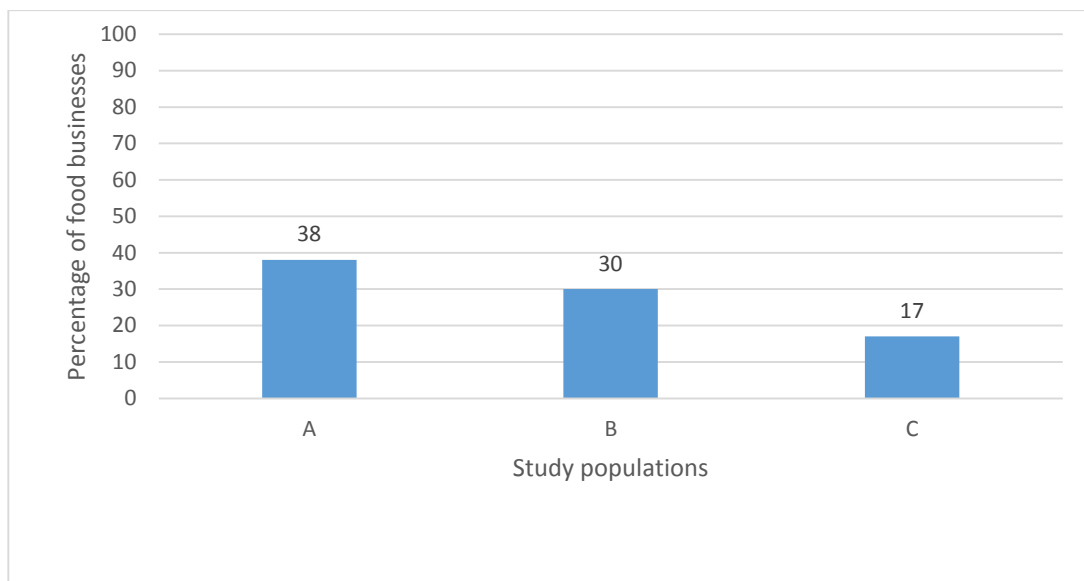


Figure 21. Percentage of food businesses with inadequate arrangements for reporting sickness in food handlers and their exclusion from food handling activities

### 3.9.14 Cleanliness of food businesses

#### 3.9.14.1 Cleaning schedule for food preparation rooms

For the purposes of this research, a cleaning schedule, was defined as a set of written instructions used by the FBO / manager for the effective cleaning and, where appropriate, disinfection of the internal structure of food rooms / food equipment / food contact surfaces. The instructions would cover what, how and when something was to be cleaned / disinfected.

Only a minority of food businesses in all risk rated categories produced and used cleaning schedules (see Figure 22 and Appendix 24).

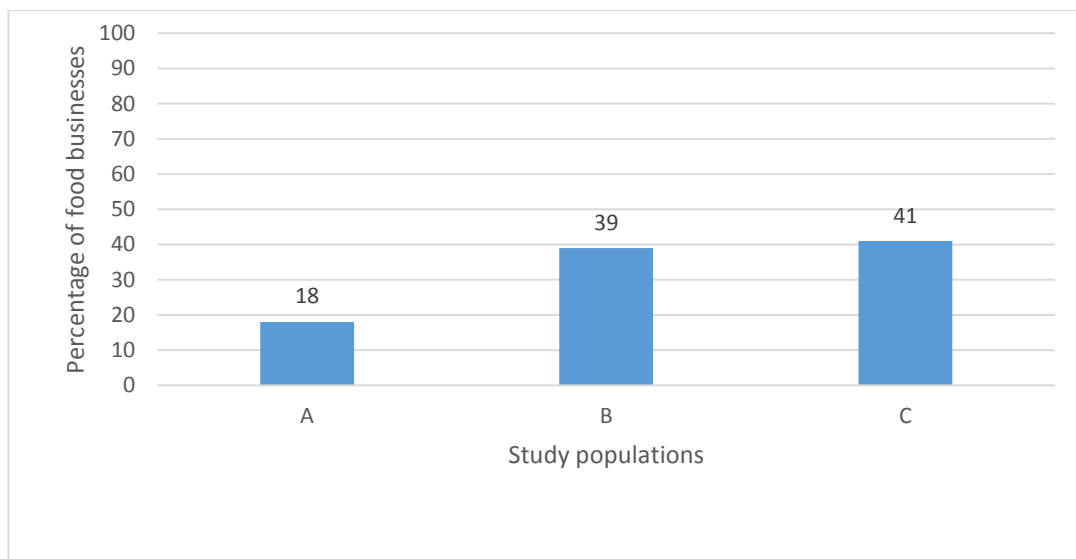


Figure 22. Percentage of food businesses with a cleaning schedule for food preparation rooms

#### 3.9.14.2 The extent of implementation of cleaning where a cleaning schedule was present

Within some food businesses that possessed a cleaning schedule there was evidence of its non-use. In the A risk rated category only half of food businesses implemented their cleaning schedule (see Figure 23 and Appendix 25).

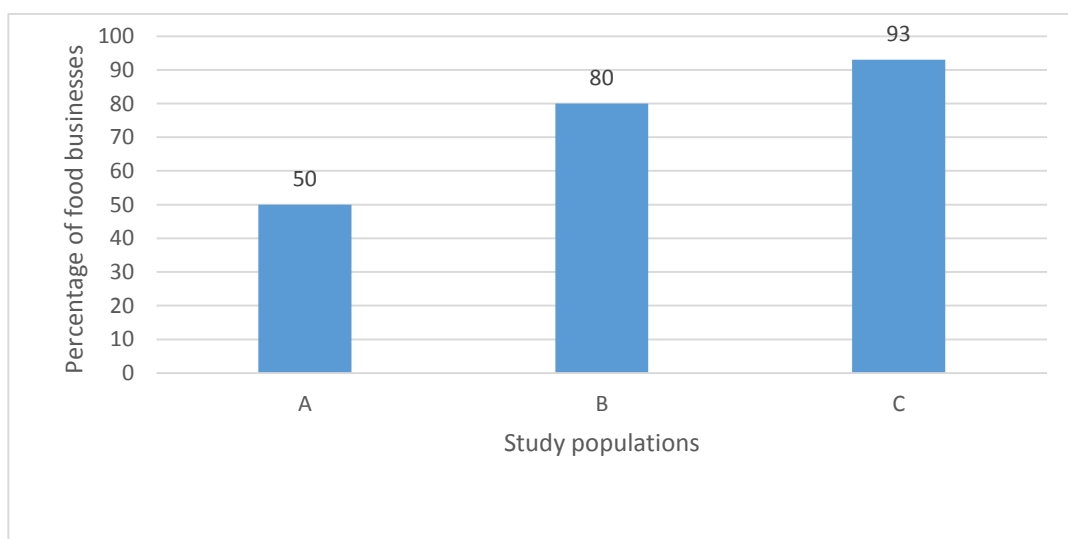


Figure 23. The extent of implementation of cleaning schedules where present

### 3.9.14.3 Food equipment with visible contamination

The presence of a cleaning schedule was not an essential requirement for the cleanliness of food equipment. Of the food businesses that did not possess a cleaning schedule, the majority had a satisfactory standard of cleaning / disinfection of food equipment in terms of the absence of visible contamination (see Figure 24 and Appendix 26).

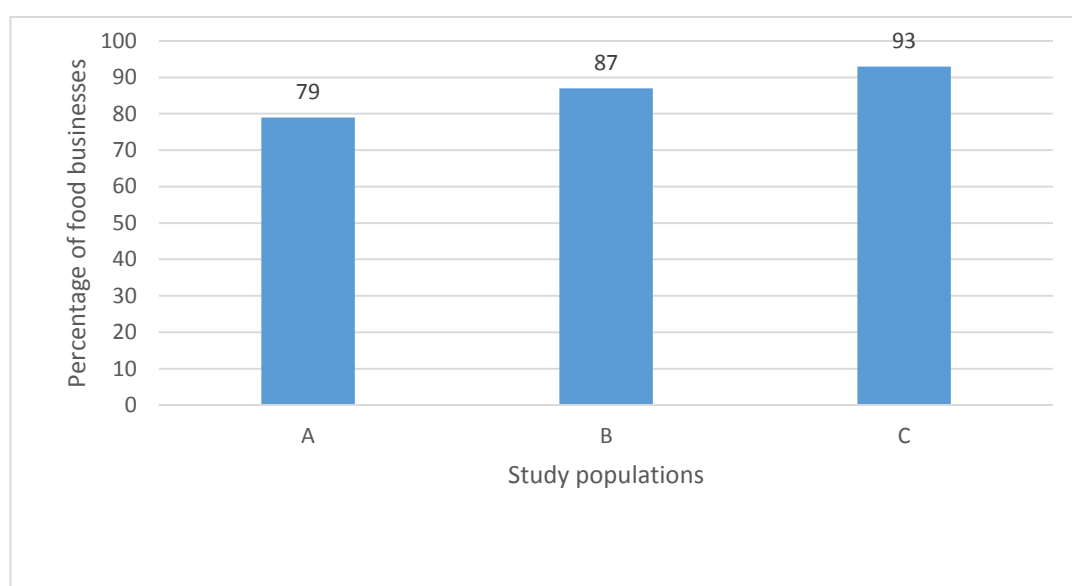


Figure 24. Percentage of food businesses using equipment without visible contamination

### 3.9.14.4 Visible cleanliness of food utensils in food businesses

Of the food businesses that did not possess a cleaning schedule, the majority had a satisfactory standard of cleaning and disinfection of food utensils. However, contaminated utensils were found within all risk categories. Such utensils were either being used in food preparation or present but not in use (see Figure 25 and Appendix 27).

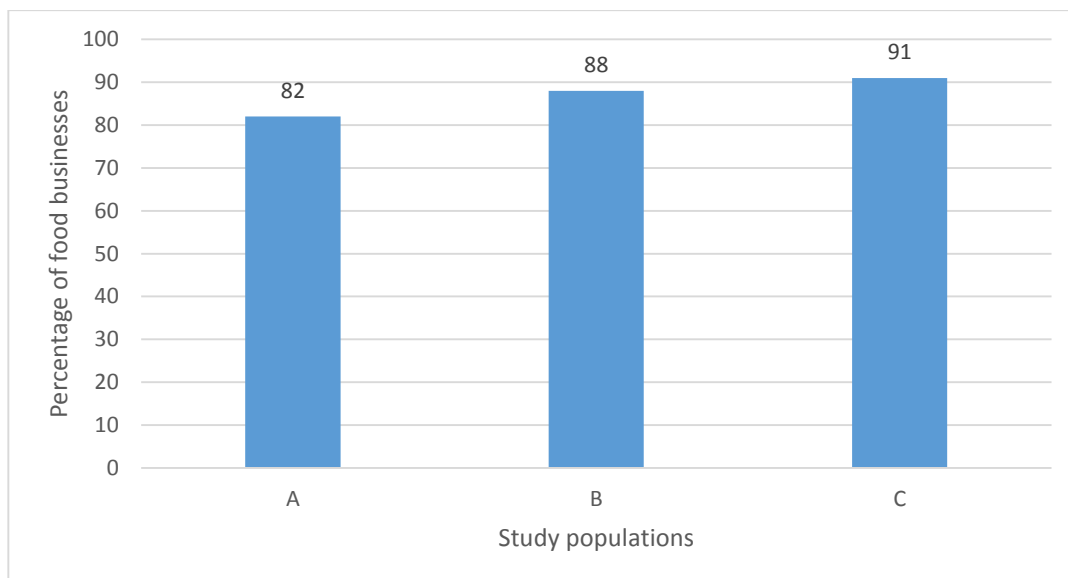


Figure 25. Percentage of food businesses possessing utensils without visible contamination

### 3.9.15 Staff understanding of cleaning responsibilities

For the purposes of this research, cleaning was defined as the process necessary to control chemical, physical and microbiological contamination of food equipment, food and hand contact surfaces.

Within the A risk rated category, nearly half of staff responsible for the cleaning of food businesses lacked adequate understanding of their cleaning responsibilities (see Figure 26 and Appendix 28).

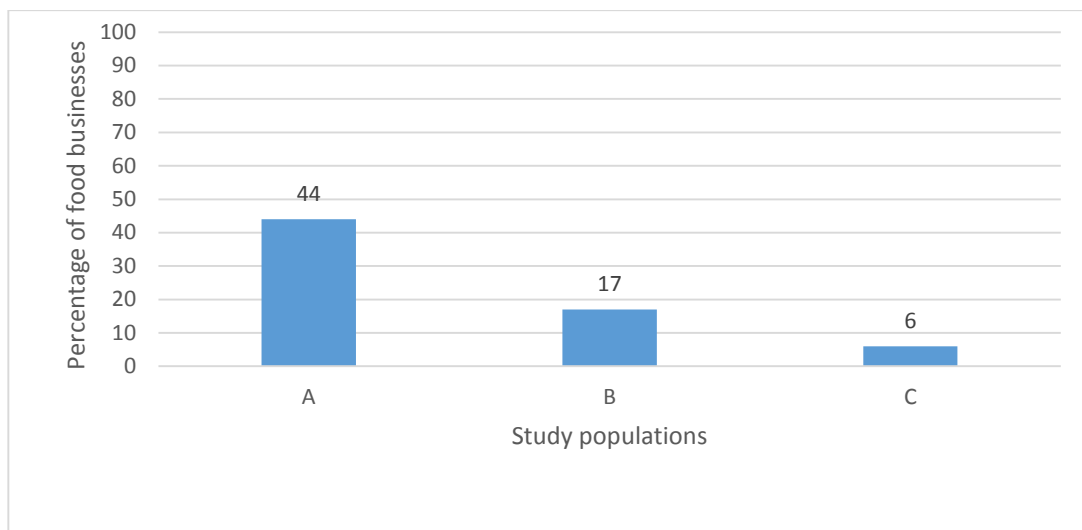


Figure 26. Percentage of food businesses employing staff with inadequate knowledge of cleaning responsibilities

### 3.9.16 Absence of sanitisers / disinfectants for use on food equipment / utensils / food contact surfaces

Examples of the absence of sanitisers / disinfectants were found within all risk rated categories (see Figure 27 and Appendix 29).

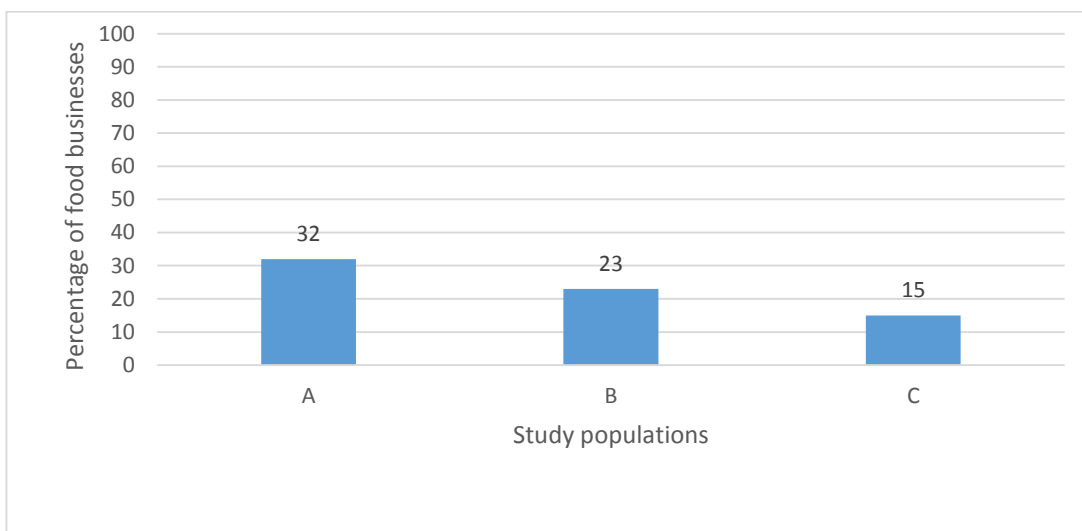


Figure 27. Percentage of food businesses lacking sanitisers / disinfectants for use on food equipment / food contact surfaces

### 3.9.17 Pest control

#### 3.9.17.1 Evidence of pest activity in food premises

This research focused only on food pests that could create microbiological and / or physical hazards to food by:

- i. direct damage to food or food packaging;
- ii. physical contamination of food;
- iii. microbiological contamination of food.

The pests noted included cockroaches and rodents. In this research, activity was defined as when the researcher noted live pests and / or pest droppings or evidence of physical damage to foods or food packaging. Pests were present in businesses in all risk rated categories (see Figure 28 and Appendix 30).

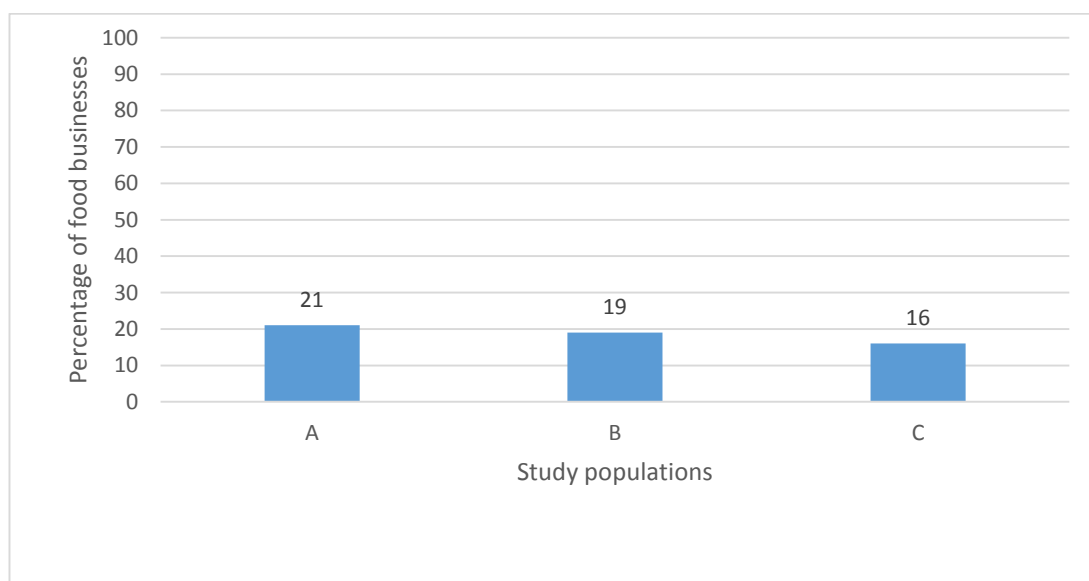


Figure 28. Percentage of food businesses with evidence of pest activity

### **3.9.17.2 Evidence of pest control treatments being carried out and the presence of pest control treatment records**

Of the food businesses where the presence of pests was noted, the majority were undertaking pest control treatments with appropriate records being retained for verification purposes (see Figure 29 and Appendix 31).

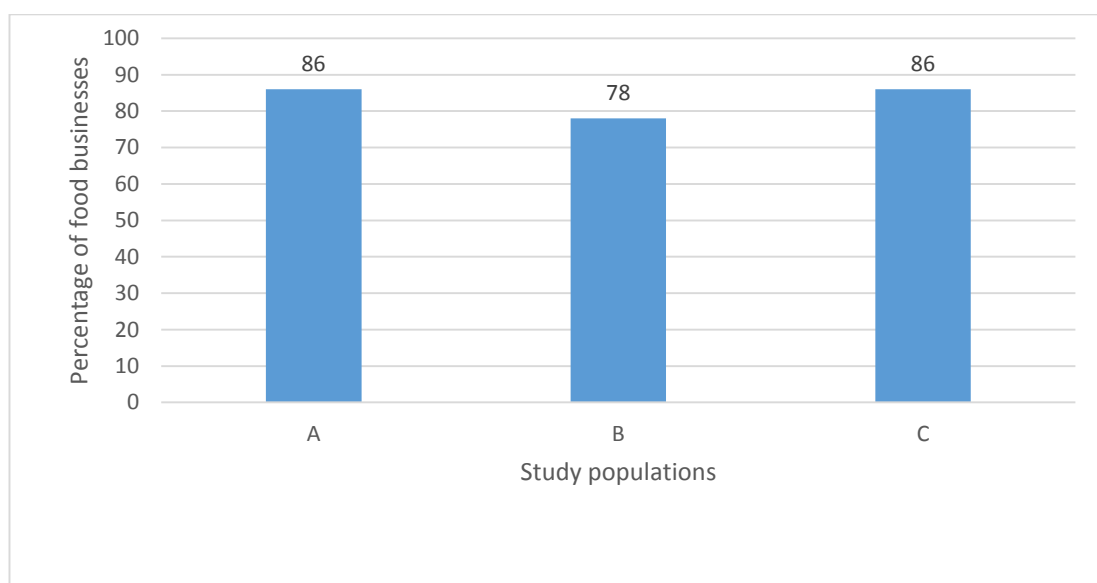


Figure 29. Percentage of food businesses with evidence of pest control treatments being undertaken and presence of records of treatments

### **3.9.18 Hand washing procedures for food handlers**

#### **3.9.18.1 Evidence of food handlers not washing hands after handling raw food / before handling ready-to-eat food**

Of all body parts, a food handler's hands are the most likely to come into contact with food. Hands can be contaminated by several sources including:

- i. non-food items such as refuse, waste receptacles and WC handles;
- ii. skin, nose, mouth and the hair of food handlers;
- iii. toilet paper;
- iv. raw foods.

Examples of inadequate hand washing were noted in businesses in all risk rated categories (see Figure 30 and Appendix 32).

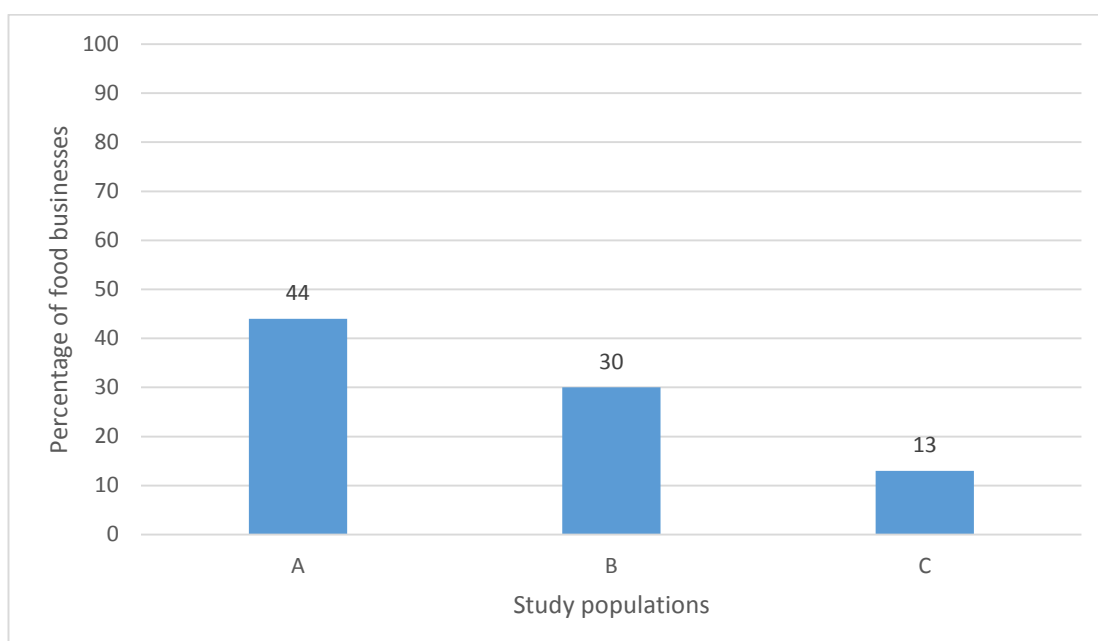


Figure 30. Evidence of inadequate hand washing in food businesses after handling raw food / contaminated items / before handling ready to eat food

### 3.10 The assessment of critical control points and monitoring of controls

The assessment involved the CCPs that were within the control of the FBOs / managers. These were the stages in a process of food handling at which the FBO / manager could exercise control, which could prevent a food safety hazard or reduce the risk of such a hazard to an acceptable level. The CCPs assessed were as follows:

#### 3.10.1 Raw food stored above or in contact with high risk cooked / ready to eat food

To facilitate good food hygiene practice, there should be separate refrigerators for the storage of chilled raw and high-risk foods. However, the majority of food businesses did not have separate chilled storage for this purpose. Due to space or financial constraints a single refrigerator was often used for the cold holding of high risk ready to eat and raw foods. Therefore within such food businesses, incorrect storage could

create the risk of contamination of high-risk foods. Although the risk of contamination was observed at low levels in all risk categories, the B risk rated category had the highest contamination risk (see Figure 31 and Appendix 33).

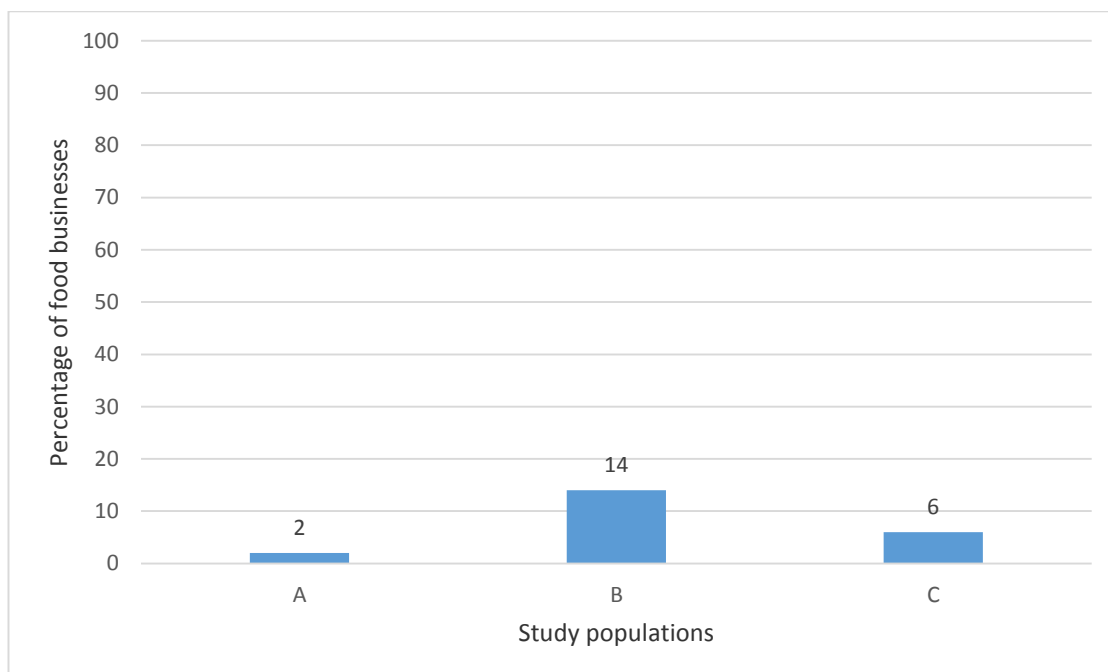


Figure 31. Percentage of food businesses with raw food stored above or in contact with cooked / ready to eat food

### 3.10.2 Temperature control in chilled storage

Cold holding is an important component of food safety, as it affects one of the intrinsic factors for the multiplication of pathogenic microorganisms. The provision of effective temperature control maintains high-risk foods below 5 Celsius, the temperature above which most pathogenic bacteria may begin to multiply. Chilled storage was used within the vast majority of food businesses of the study populations. In terms of legislation, the maximum temperature for chilled foods under the previous Food Safety (Temperature Control) Regulations 1995 and the current Food Safety and Hygiene (England) Regulations 2013 is 8 Celsius.

During the inspections of food premises, all temperatures were measured by the researcher using a calibrated hand held probe thermometer. The measurement position where practicable was the centre of the food in order to record the core temperature.

### 3.10.3 High risk foods in one or more refrigerators held at above 8 Celsius

Examples of inadequate cold temperature control was found within all risk rated categories (see Figure 32 and Appendix 34).

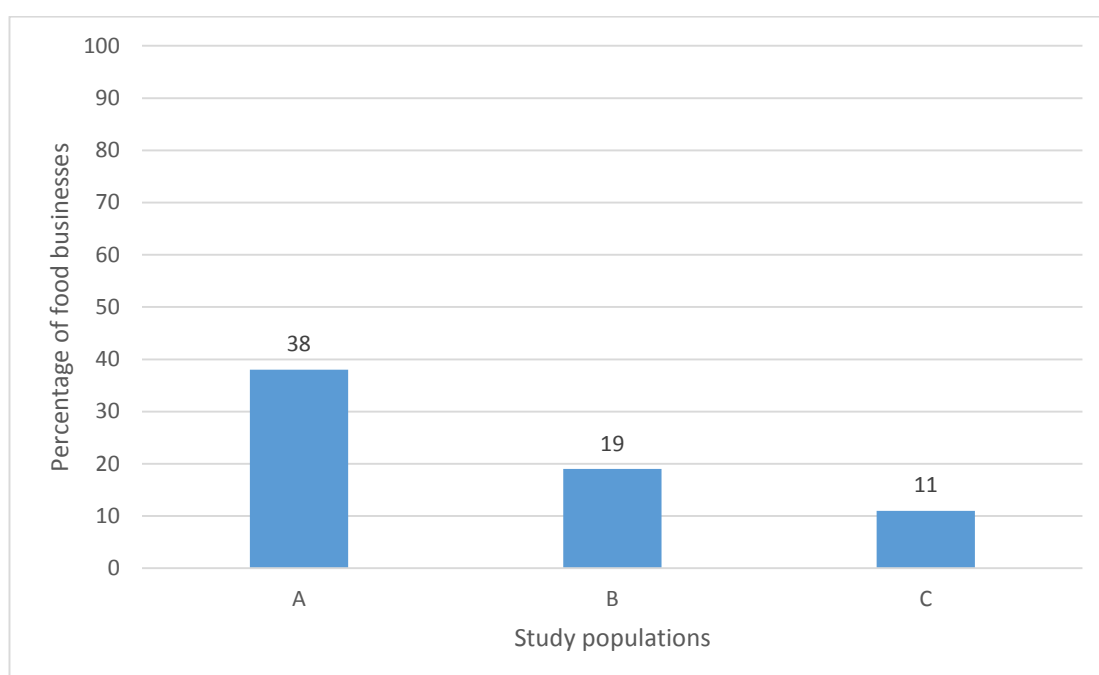


Figure 32. Percentage of food businesses with chilled high risk foods stored at above 8 Celsius

### 3.10.4 High risk foods in display units held at above 8 Celsius

These units are designed to keep food cool for relatively short times prior to service. The temperature of the food within the chilled display unit will be the temperature at which the food will be eaten if immediately consumed. Of the food businesses in all risk categories that operated chilled display units, over a quarter were non-compliant (see Figure 33 and Appendix 35).

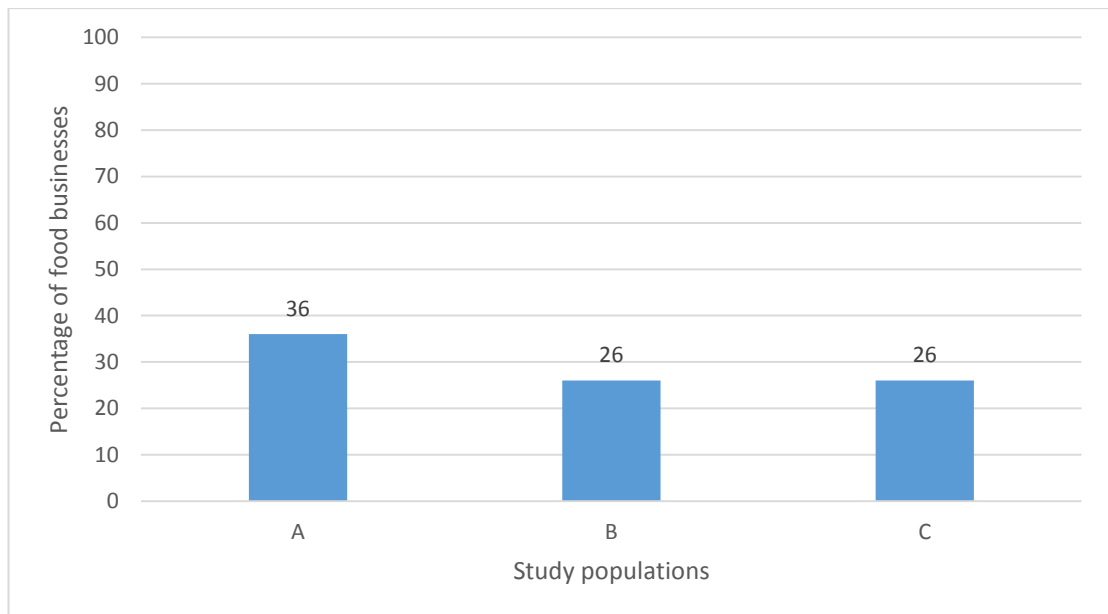


Figure 33. Percentage of food businesses with foods in chilled display units held above 8 Celsius

### 3.10.5 Temperature monitoring and maintenance of temperature records for cold held foods

The use of accurate temperature records assists a FBO to actively monitor and maintain safe cold holding temperatures of foods, allowing corrective actions to be taken when the critical limit is exceeded. The majority of food businesses did not use a calibrated thermometer to monitor food temperatures or keep temperature monitoring records for cold held food. The absence of temperature monitoring records was noted in the majority of food businesses (see Figure 34 and Appendix 36). The lack of temperature monitoring of chilled foods was partly due to the reliance placed on built in digital temperature monitoring devices in most chilled units.

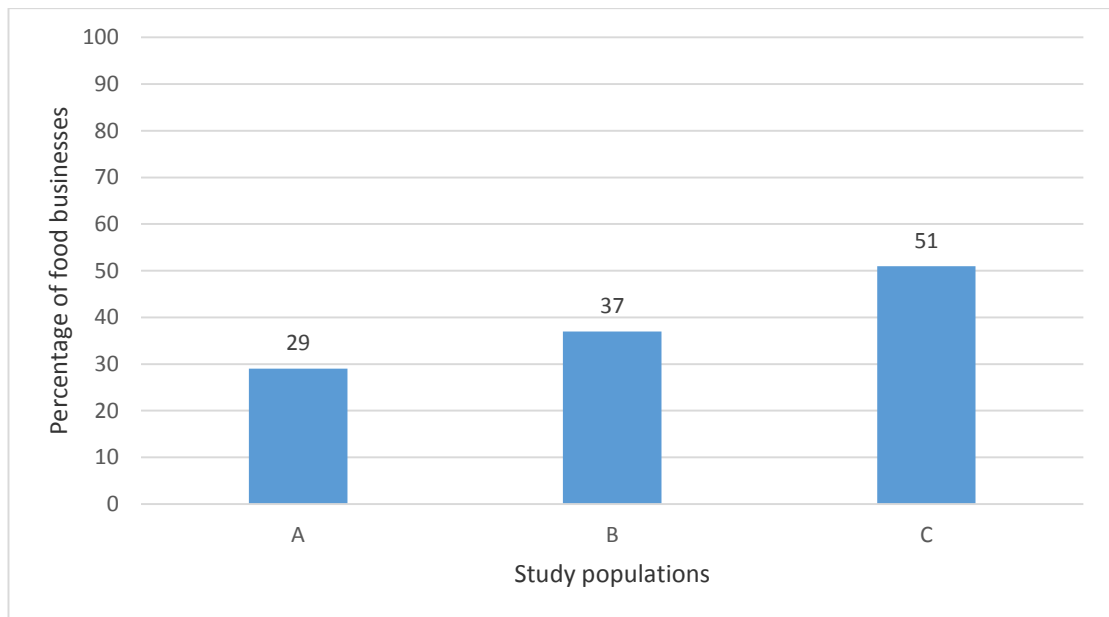


Figure 34. The percentage of food businesses with temperature monitoring records for chilled storage of foods

#### **3.10.6 Cross contamination or potential cross contamination from the dual use of food preparation / contact surfaces**

Most foods, especially raw foods, can leave microorganisms on any surfaces with which they make contact. Ready to eat foods can become contaminated by pathogenic bacteria if they come into contact with a contaminated surface.

Within the A risk rated category 35% of food businesses did not have effective procedures in place to prevent this form of cross contamination (see Figure 35 and Appendix 37).

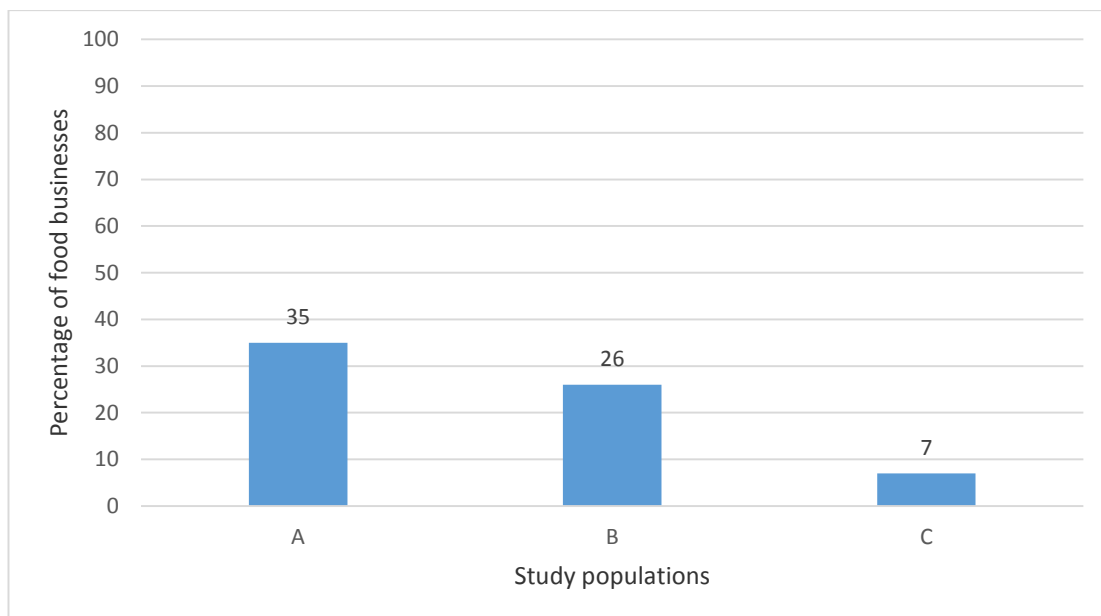


Figure 35. Percentage of food businesses with contamination or potential cross contamination in the use of food preparation / contact surfaces

### 3.10.7 Cooking practices

#### 3.10.7.1 Adequacy of cooking to destroy pathogens in food

Most forms of cooking, in addition to making food more palatable, produce temperatures high enough to destroy pathogens (although some spores and toxins may survive), provided that the food is cooked for sufficient periods of time. Therefore the heating of food during the process of cooking is a CCP. The majority of food businesses in all risk rated categories adequately cooked food. Adequate cooking is defined as the achievement of a core temperature of at least 75 Celsius (see Figure 36 and Appendix 38).

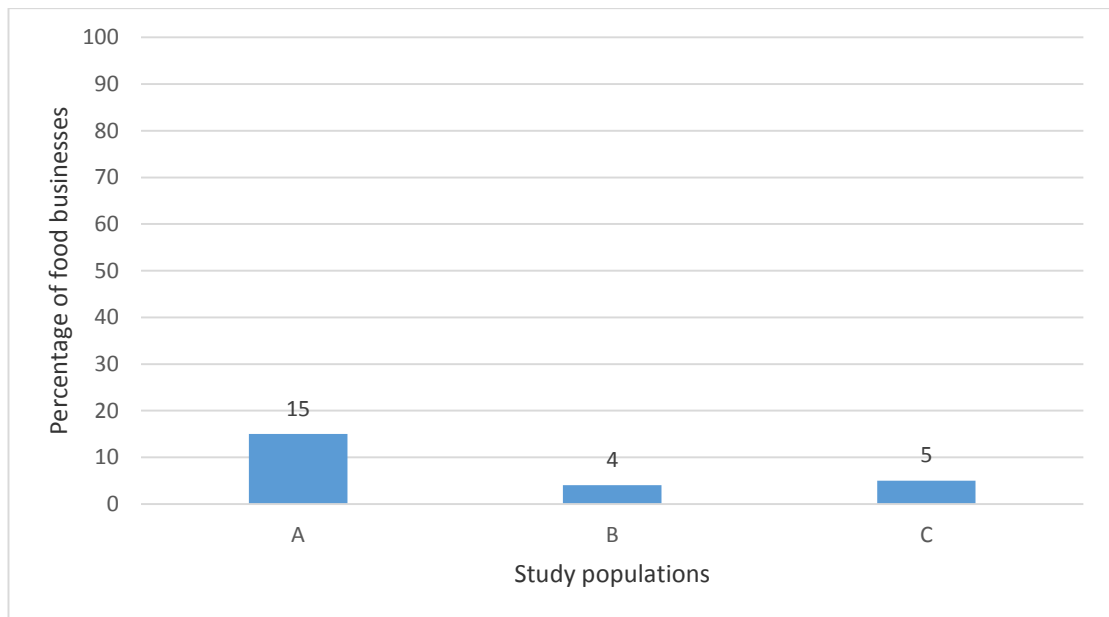


Figure 36. Percentage of food businesses with inadequate cooking temperatures

#### 3.10.7.2 Use of thermometers for monitoring of cooking / hot held temperatures

The use of a calibrated thermometer is an objective method of verifying that temperatures critical to food safety have been achieved. Other methods used rely on subjective observations such as clear running juices in cooked poultry. Subjective methods are deemed acceptable by the Food Standards Agency in guidance provided in Safer Food Better Business (see Chapter 1. 5.3).

The majority of food businesses either did not use thermometers and / or relied on previous experience of food handlers to gauge the correct time / temperature combination to achieve safe cooking / hot hold temperatures (see Figure 37 and Appendix 39).

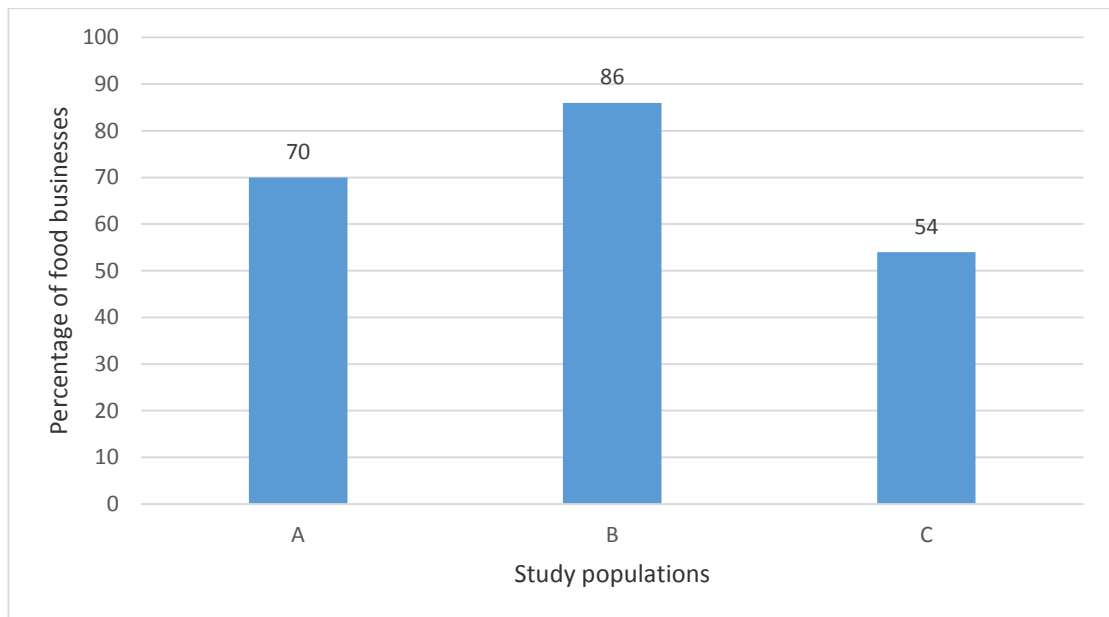


Figure 37. Percentage of food businesses not using thermometers to monitor cooking / hot holding temperatures

### 3.10.7.3 Temperature monitoring records for cooked / hot held food

The use of accurate temperature monitoring records assists a FBO / manager to actively monitor and maintain safe cooking and hot holding temperatures and to implement corrective actions when critical limits are exceeded. The majority of food businesses in all risk rated categories did not maintain temperature monitoring records for cooked / hot held foods. (see Figure 38 and Appendix 40).

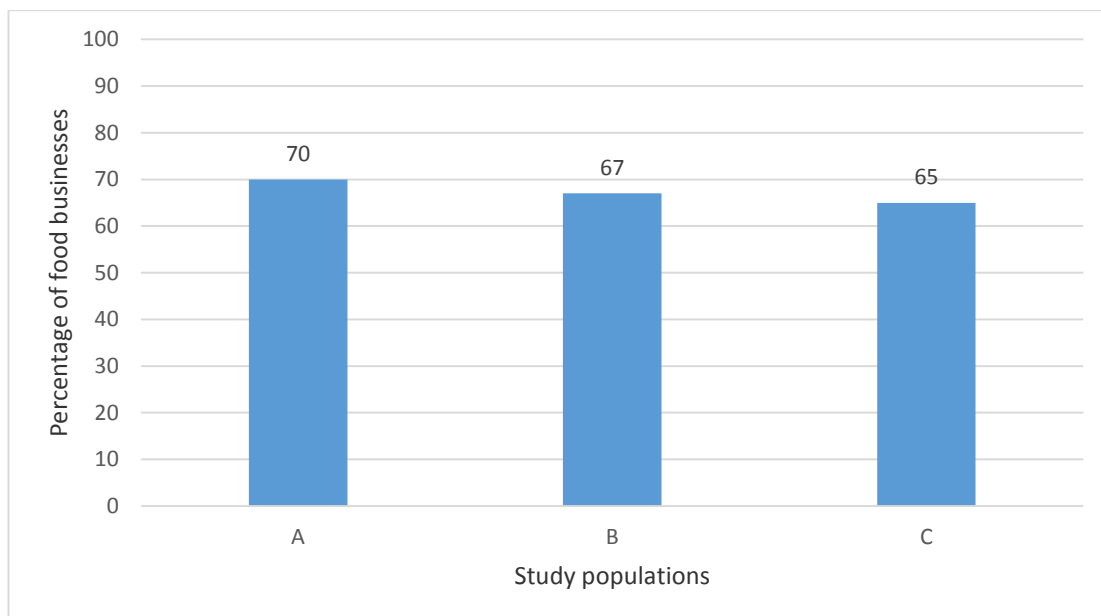


Figure 38. Percentage of food businesses not maintaining temperature monitoring records for cooked / hot held food

### 3.10.8 Storage of high risk cooked / ready to eat foods

#### 3.10.8.1 High risk cooked / ready to eat foods held at ambient temperature

Temperatures (between 5 and 63 Celsius) encourage the multiplication of pathogenic or spoilage micro-organisms. Therefore where high-risk foods are not under correct temperature control, pathogens within the food can multiply, reaching levels that can cause illness if the food is consumed. Ambient storage of high-risk foods was noted in a minority of food businesses (see Figure 39 and Appendix 41).

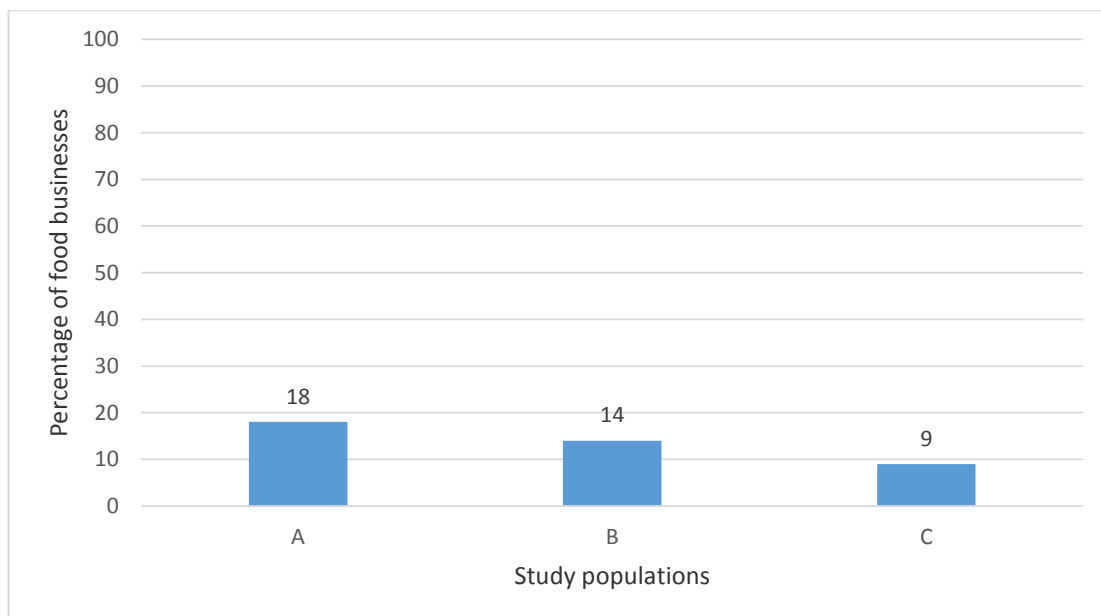


Figure 39. Percentage of food businesses with high risk cooked / ready to eat foods stored at ambient temperature

### 3.10.8.2 Hot held high risk food held at a minimum temperature of 63 Celsius

In order to minimise the multiplication of pathogens and food spoilage organisms hot held high-risk foods should be held at a minimum of 63 Celsius. In all risk rated categories more than half of food businesses that undertook hot holding held high risk foods below 63 Celsius (see Figure 40 and Appendix 42).

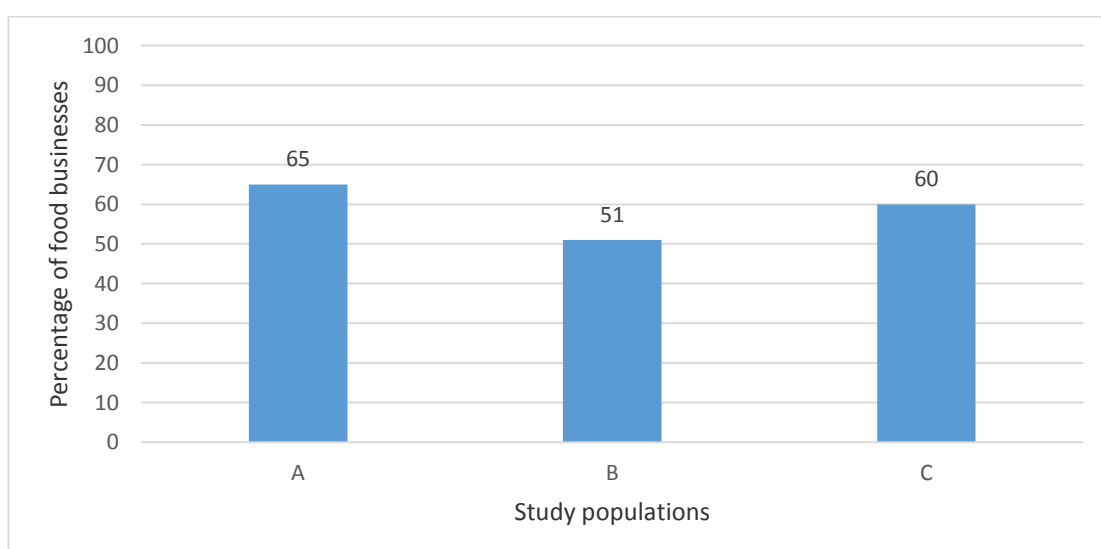


Figure 40. Percentage of food businesses with inadequate hot holding temperatures

### 3.10.9 Cross contamination from cleaning practices

#### 3.10.9.1 Visible contamination on cleaning cloths, scourers, sponges and other cleaning implements

Cleaning cloths, scourers, sponges and other cleaning implements are unobtrusive and are often not considered by food handlers as being significant to food safety (Engel *et al*, 2001). Such implements are commonly contaminated and need to be regularly replaced or cleaned and disinfected to prevent them becoming a vehicle of indirect contamination of food.

Visibly contaminated cleaning cloths, scourers, sponges and other cleaning implements such as cleaning brushes were noted in a minority of food businesses in all risk rated categories (see Figure 41 and Appendix 43).

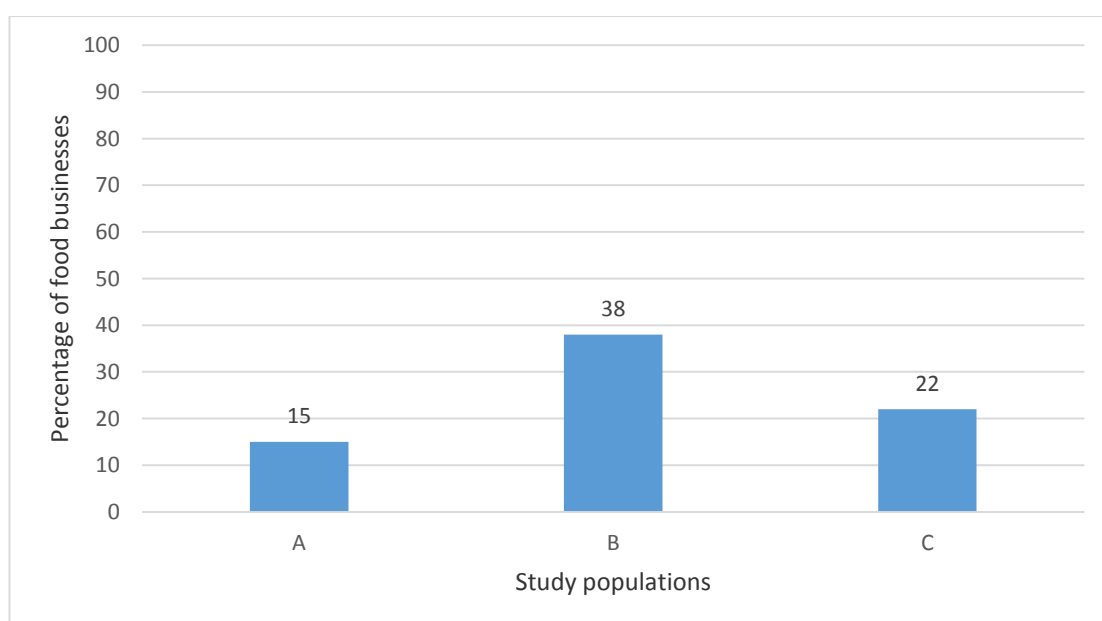


Figure 41. Percentage of food businesses where visible contamination was found on cleaning cloths, scourers, sponges and other cleaning implements

### **3.11 Analysis of the components of Regulation 4.(3) – the hazard analysis requirement**

The first criteria used to assess the extent of compliance was an analysis of the components of Reg 4.(3). These components were:

1. the analysis of the food hazards in the food business;
2. the identification of the points where hazards occur;
3. the identification of the points which are critical to food safety;
4. the identification and implementation of effective control and monitoring procedures at the critical points;
5. the review of the food hazards, critical points and the control and monitoring procedures periodically and whenever business operations change.

The primary data obtained from interviews with the FBOs / managers of the study populations was quantified and graphically presented in terms of the percentages of each population under the Regulation 4.(3) components.

#### **3.11.1 The analysis of food hazards**

Within food businesses' operations, three main categories of food hazard were present:

- a. microbiological hazards, caused by bacteria and other microorganisms that have the potential to cause food poisoning.
- b. chemical hazards, for example cleaning chemicals and pesticides.
- c. physical hazards arising from materials such as glass, metal, plastics and packaging materials.

Within the food businesses of the study populations various hazards existed, dependent upon the types of foods present and methods of food preparation and storage.

Every FBO had a legal obligation to identify the food hazards present within their food business. The extent of such identification of food safety hazards by FBOs /managers is shown graphically below (see Figure 42 and Appendix 44).

Within all the risk rated categories the most frequently identified type of hazard was microbiological. Physical hazards were less frequently identified than microbiological hazards. Chemical hazards were the least identified of all of the three types of hazards.

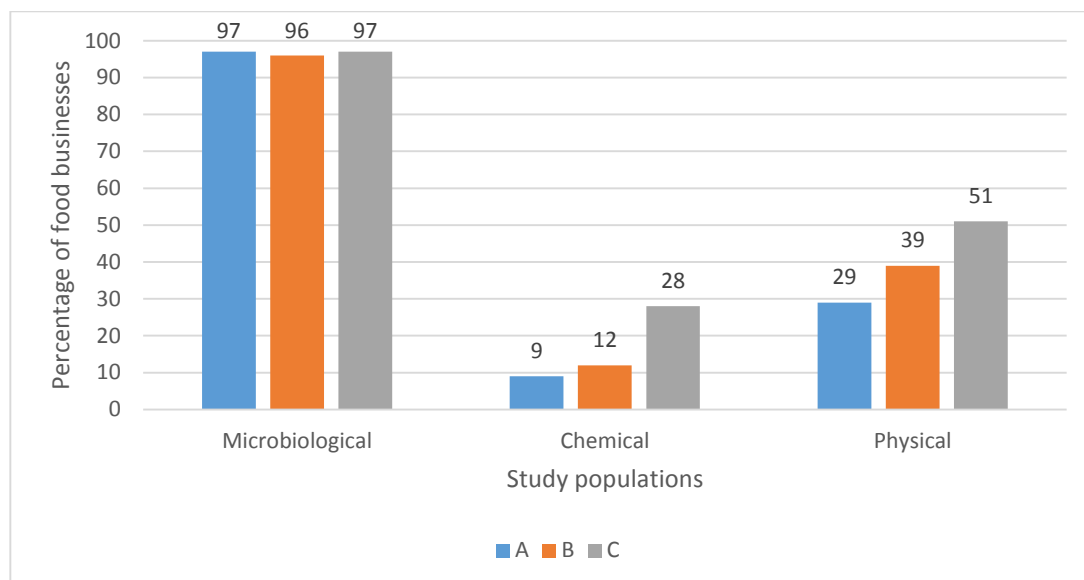


Figure 42. Reg 4.(3) (a) extent of food hazard identification in study populations

### 3.11.2 The identification of the points where hazards occur

Under the hazard analysis requirement, every FBO had the legal obligation to identify such hazards present within their food business at the points where they occurred. Within all risk rated categories these points were correctly identified by only a minority of food businesses (see Figure 43 and Appendix 45).

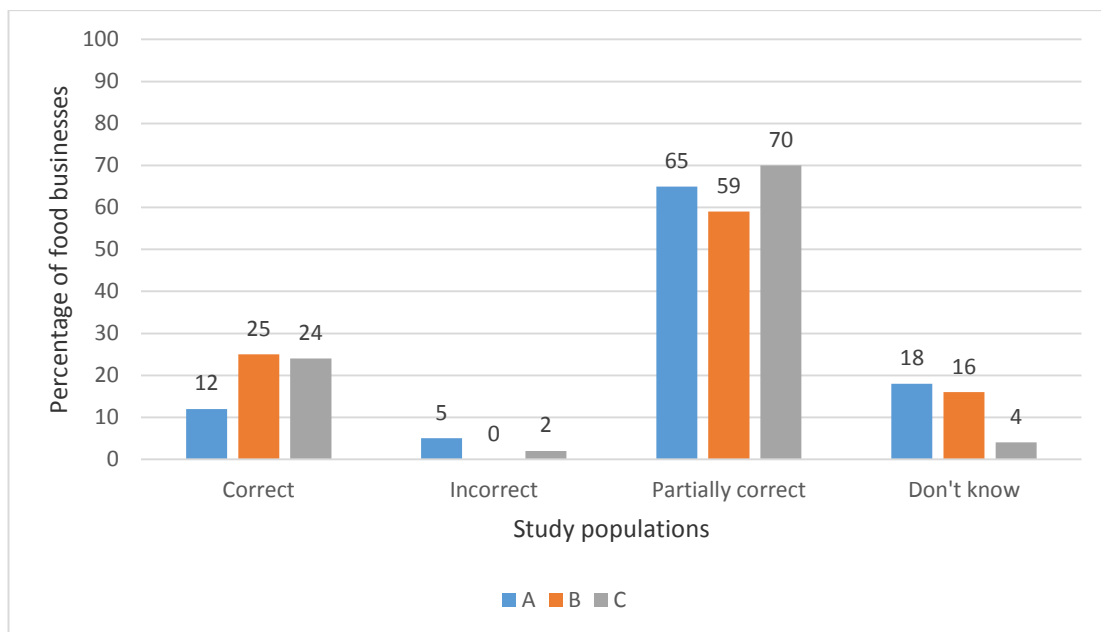


Figure 43. Reg 4.(3) (b) identification of the points where food safety hazards may occur

The stages identified by the FBOs / managers where hazards could occur were analyzed and quantified (see Figure 44 and Appendix 46).

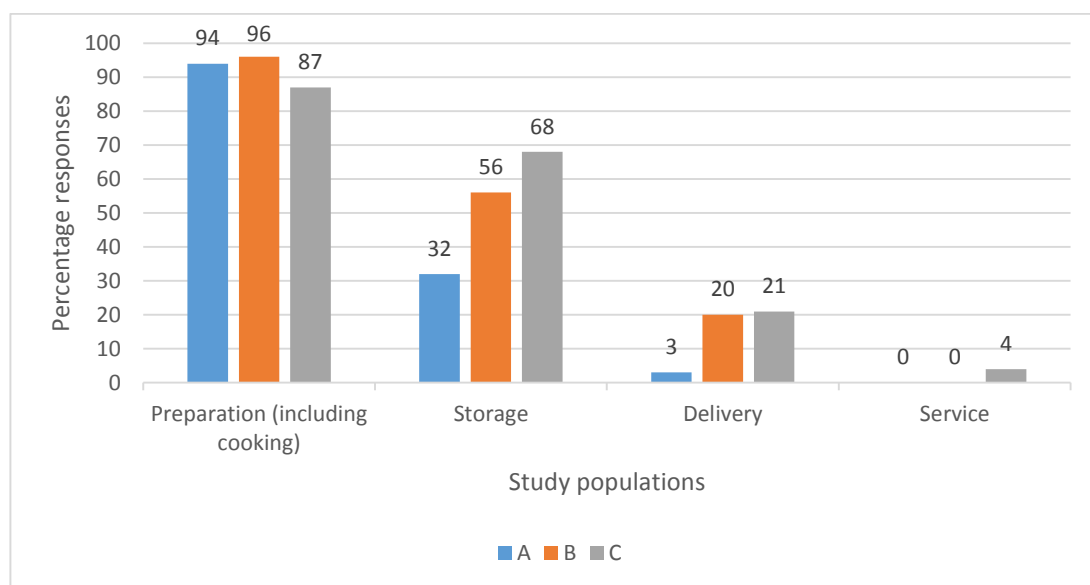


Figure 44. Reg 4.(3) (b) points in food handling where food hazards may occur

### 3.11.3 The identification of the points that are critical to food safety (critical points)

Within the study populations only a minority of FBOs / managers correctly identified relevant CCPs within their food businesses (see Figure 45 and Appendix 47).

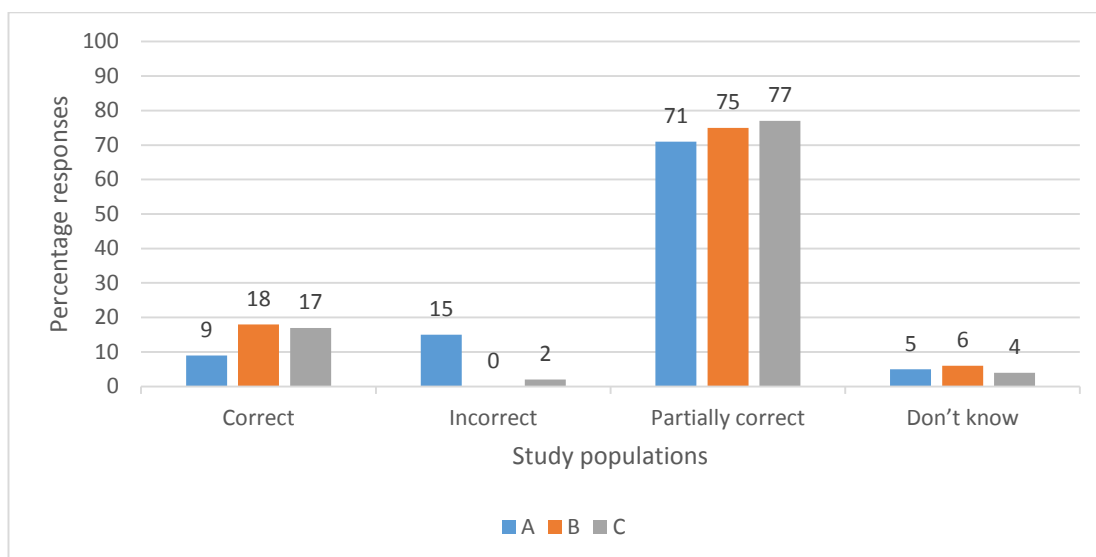


Figure 45. Reg 4.(3) (c) correct identification of points which are critical to ensuring food safety in study populations

The points identified as critical to ensuring food safety by FBOs / managers are shown graphically below (see Figure 46 Appendix 48).

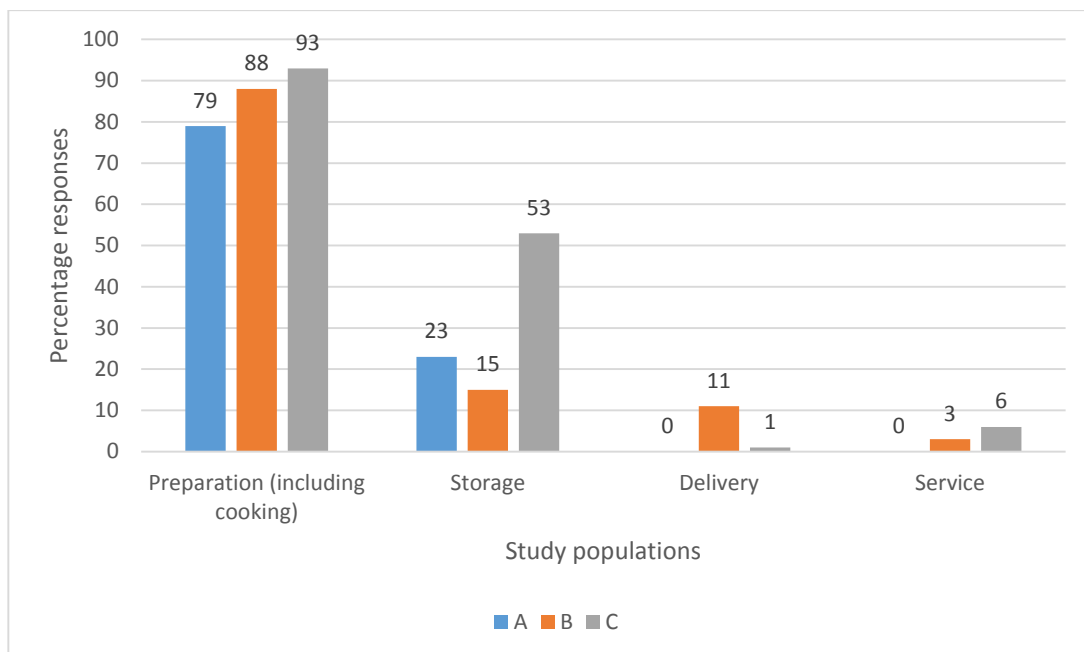


Figure 46. Reg 4.(3) (c) responses identifying points which are critical to ensuring food safety

### 3.11.4 The identification and implementation of effective control and monitoring procedures at the critical points

FBOs were legally required to introduce adequate controls at critical points and to introduce checks to monitor and verify such controls. The introduction of a control must either eliminate or reduce a food safety hazard to an acceptable level. Controls should be as simple and precise as possible and use parameters that can be easily monitored.

Within all risk rated categories a minority of FBOs / managers correctly identified these points. The majority of FBOs /managers had partially fulfilled this requirement (see Figure 47 and Appendix 49).

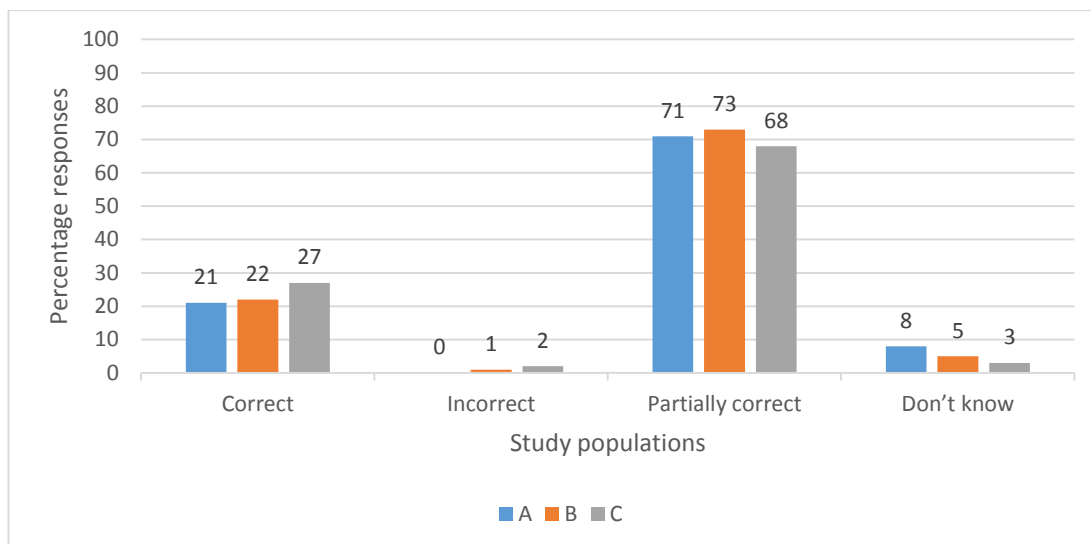


Figure 47. Reg 4.(3)(d) identification and implementation of effective control and monitoring procedures in study populations

FBOs / managers in all risk rated populations provided a wide range of control and monitoring procedures at the critical points, which were quantified and categorised (see Figure 48, Table 1 and Appendix 50).

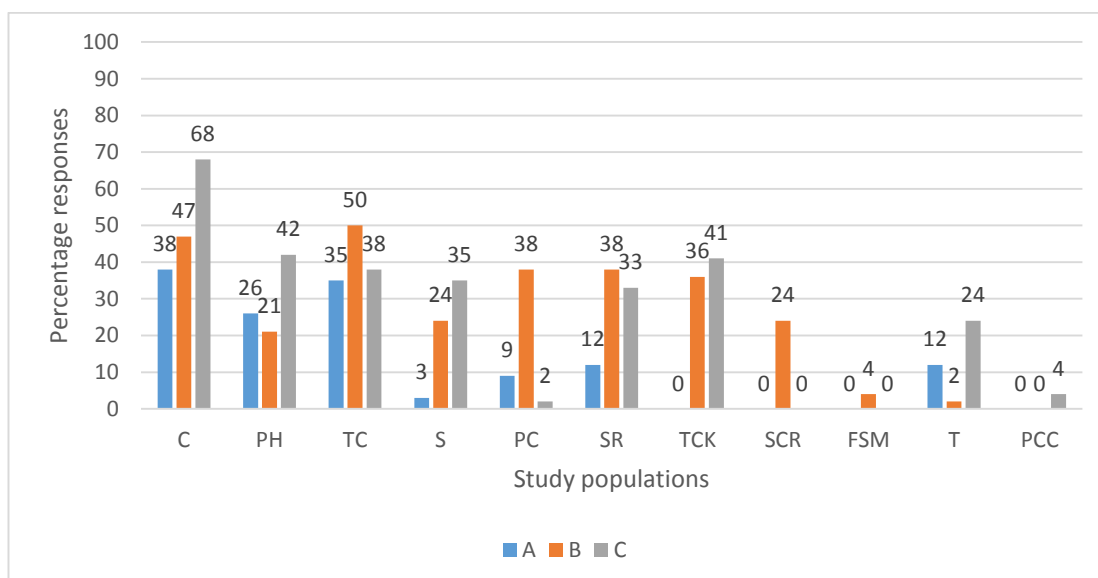


Figure 48. Reg 4.(3)(d) identification and implementation of effective control and monitoring procedures by FBOs / managers

C	Cleaning / disinfection
PH	Personal hygiene
TC	Temperature control
S	Supervision of food handlers
PC	Pest control
SR	Stock rotation
TCK	Thorough cooking of high risk foods
SCR	Separate cooked / raw foods
FSM	Comply with food safety manual
T	Training of food handlers
PCC	Implement measures to prevent cross contamination

Table 2. Key to Figure 48

### **3.11.5 Review of the food hazards, critical points and the control and monitoring procedures periodically and whenever business operations change**

A FBO was under a regulatory obligation to review his / her food safety management system to ensure its relevance in the control of food safety hazards. There were situations where the system would need to be reviewed. These included:

- i. if the controls or the methods used to check the controls were found to be ineffective or impracticable;
- ii. changes in menus that introduced new food safety hazards;
- iii. changes in the methods of food preparation;
- iv. the introduction of new equipment.

During the pilot trials the term “review” was little understood by the majority of FBOs. It was therefore replaced by a more easily understood “How do you know if the actions are working?” A common response received from FBOs / managers related to the absence of customer complaints. Although a valid response in terms of the question asked, it was incorrect within the legislative requirement and was considered as such. An appropriate review was entirely absent within both the A and C risk rated categories and found in less than 10% of B rated food businesses (see Figure 49 and Appendix 51).

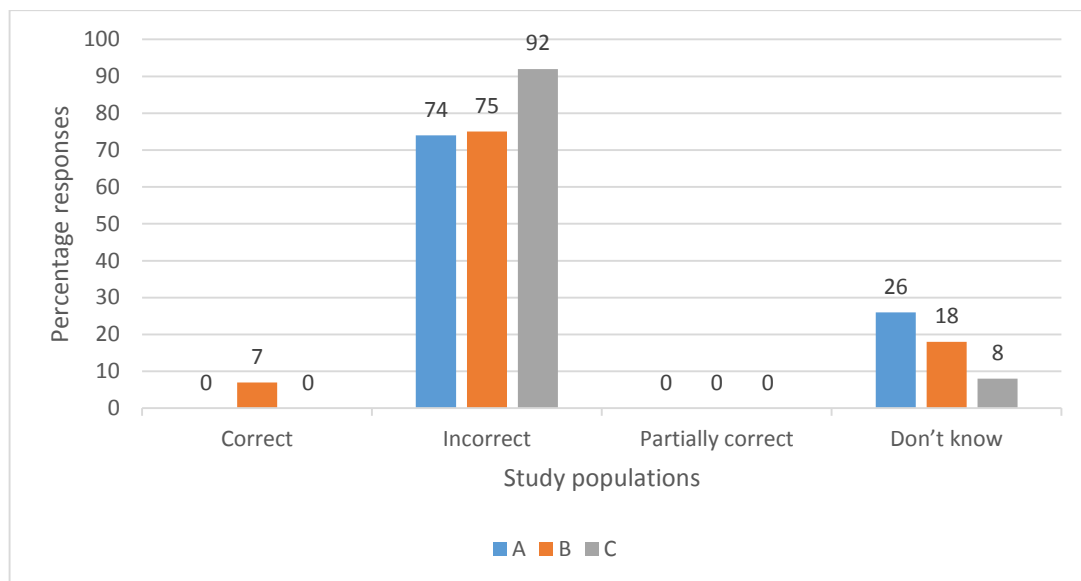


Figure 49. Reg 4.(3)(e) review of the hazards, the CCPs and control and monitoring procedures periodically and whenever the food business operations change in study populations

The primary data produced a wide range of incorrect responses in relation to what FBOs / managers believed to be a review of their food safety management system; these were quantified and categorised (see Figure 50, Table 2 and Appendix 52).

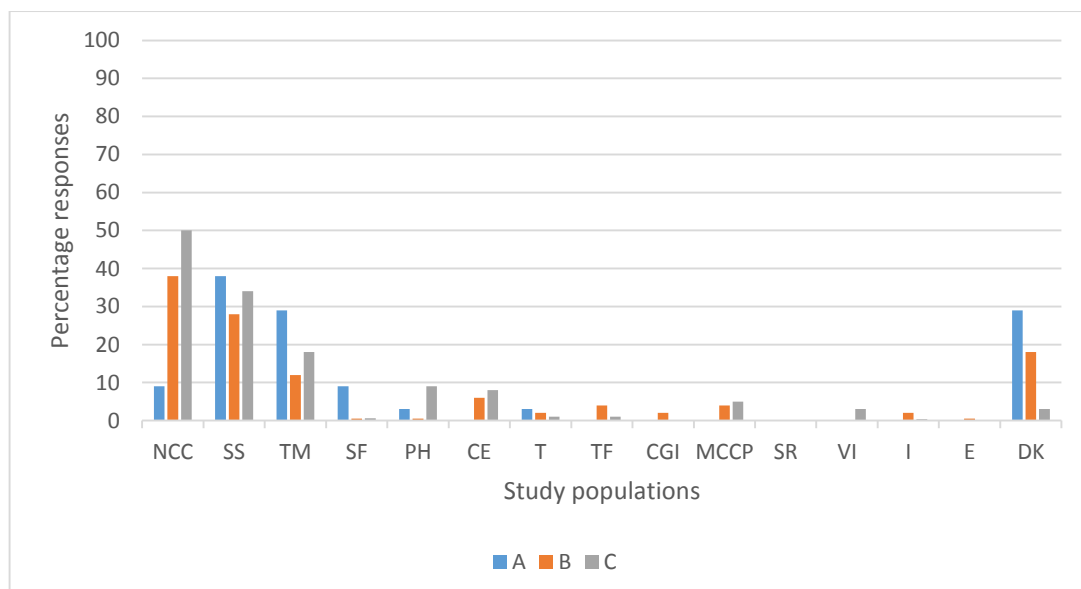


Figure 50. Reg 4.(3)(e) the range of incorrect responses for review

Responses		Percentage Responses		
		A	B	C
NCC	No customer complaints	9	38	50
SS	Supervise staff	38	28	34
TM	Temperature monitoring	29	12	18
SF	Smell food	9	0.5	0.6
PH	Personal hygiene	3	0.5	9
CE	Clean equipment	0	6	8
T	Training of food handlers	3	2	1
TF	Taste food	0	4	1
CGI	Check goods in	0	2	0
MCCP	Monitor CCPs	0	4	5
SR	Stock rotation	0	0	0
VI	Visual inspection	0	0	3
I	Provide information	0	2	0.3
E	Experience	0	0.5	0
DK	Don't know	29	18	3

Table 3. Key to Figure 50

### 3.12 Level of compliance with the implementation of HACCP based food safety management systems

This research found that the absence of a periodic review of food safety hazards, CCPs and control and monitoring procedures resulted in non-compliance within the entire A and C risk rated populations. In the B risk rated food businesses only a minority were fully compliant with Reg4.(3) / Article 5 (see Figure 51 and Appendix 53).

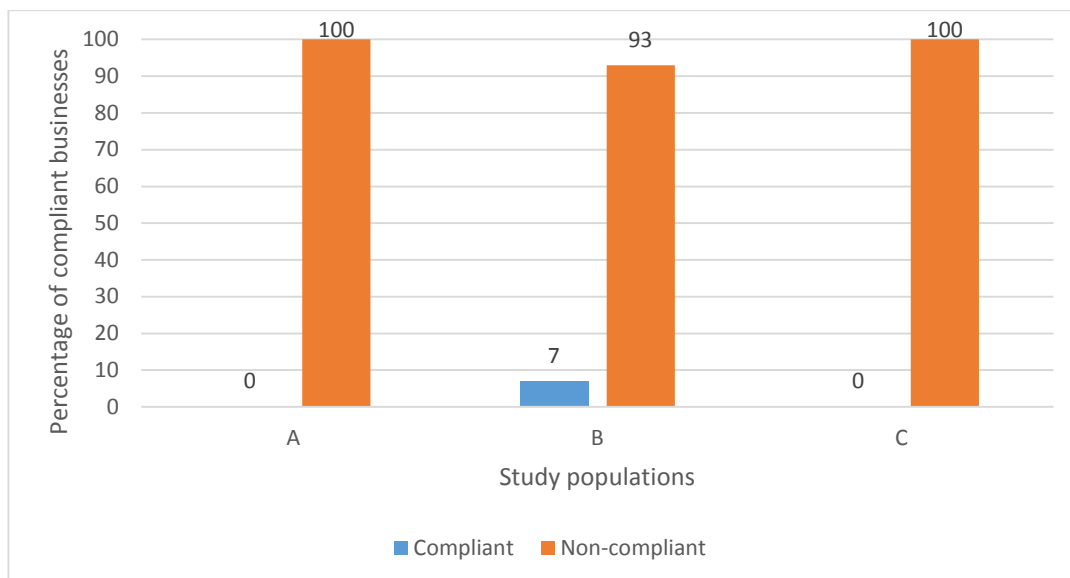


Figure 51. Level of compliance with the implementation of HACCP based systems

### 3.13 Documented Hazard Analysis / HACCP systems

#### 3.13.1 Food businesses with full documentation

Only a minority of food businesses in each risk rated category had the appropriate documentation required to implement a HACCP based system. Under the provisions of Regulation 4.(3), a documented system was not a legal requirement. However, under Article 5 of EC Regulation 852/ 2004 a documented system does need to be maintained in accordance with the size, nature and food safety hazards within the food business.

Partially documented hazard analysis / HACCP systems were present in less than half of food businesses all risk rated categories. A partially documented system was defined in this research as the presence of a combination of 2 or more completed monitoring sheets, cleaning schedules or similar (see Figure 52 and Appendix 54).

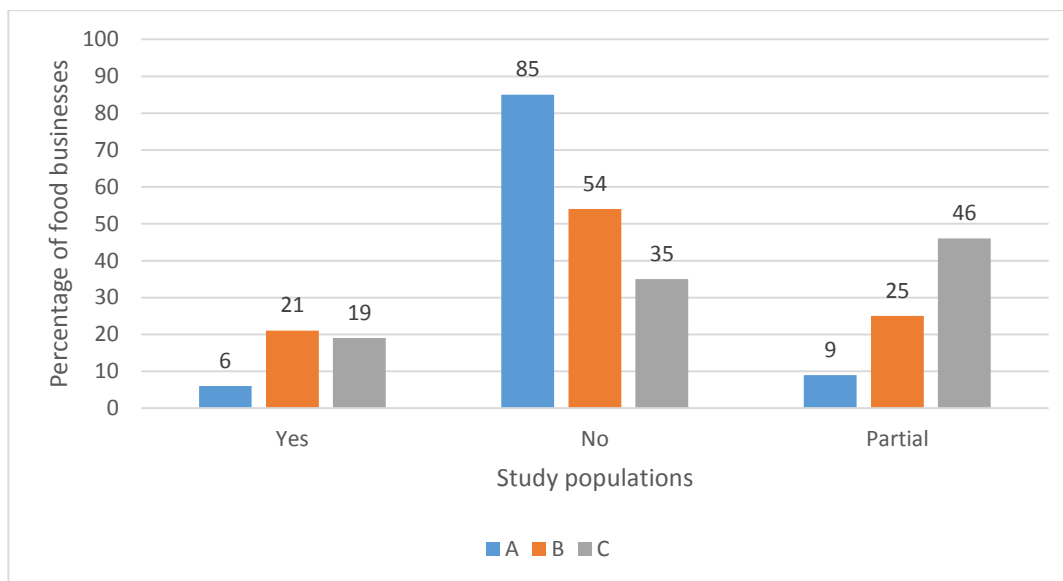


Figure 52. Percentage of food businesses with documented systems

### 3.14 Compliance of food businesses with Reg 4.(3) / Article 5

The second criteria used to assess compliance was that used by LACOTS, based on the following components:

#### 1. Analysis

The systematic approach or process that the FBO should undertake to identify the critical points, the appropriate controls at the critical points and the monitoring that must be implemented.

#### 2. Implementation

The operation of effective controls and monitoring at critical points (LACOTS, 1997).

LACOTS did not specifically include a review component in their determination of compliance which resulted in the following outcomes for the food businesses within the study populations.

### 3.15 Compliance status of food businesses

#### 3.15.1 Analysis NO / Implementation NO

Such FBOs had not undertaken an analysis of the food safety hazards in order to identify the appropriate controls, nor had they implemented effective controls at critical points. This situation was observed in the majority of A risk rated food businesses (see Figure 53 and Appendix 55).

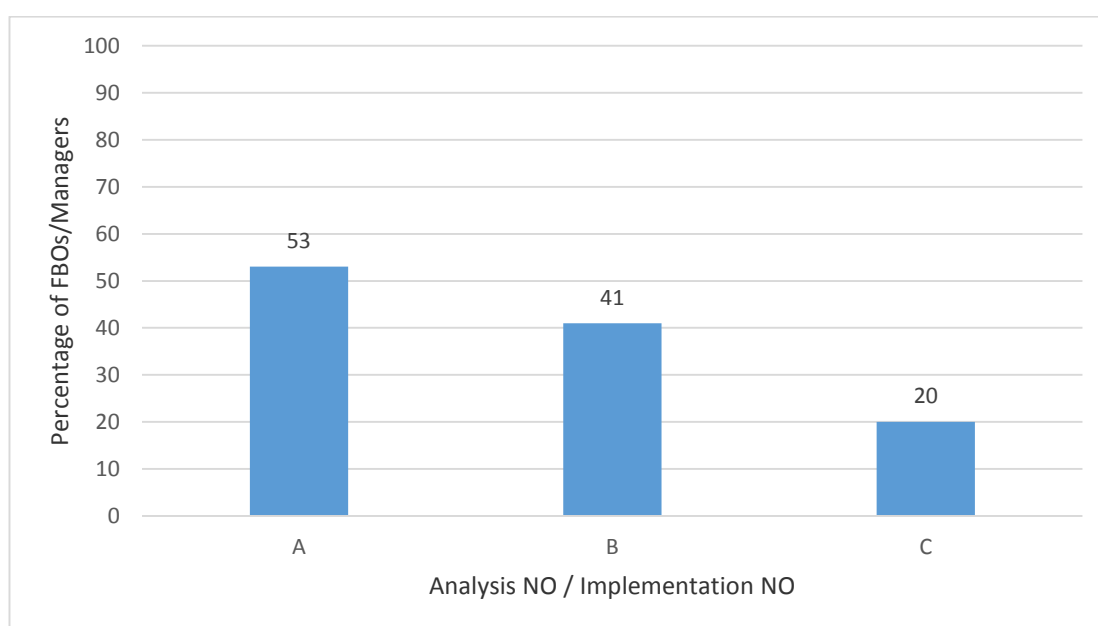


Figure 53. Percentage of FBOs / managers in study populations who had not undertaken either an analysis of food safety hazards nor implemented controls at critical points

#### 3.15.2 Analysis YES / Implementation NO

Such FBOs had undertaken an analysis of the food safety hazards in order to identify the appropriate controls, but had not implemented effective controls at critical points. FBOs meeting these criteria were found in a minority of food businesses (see Figure 54 and Appendix 56).

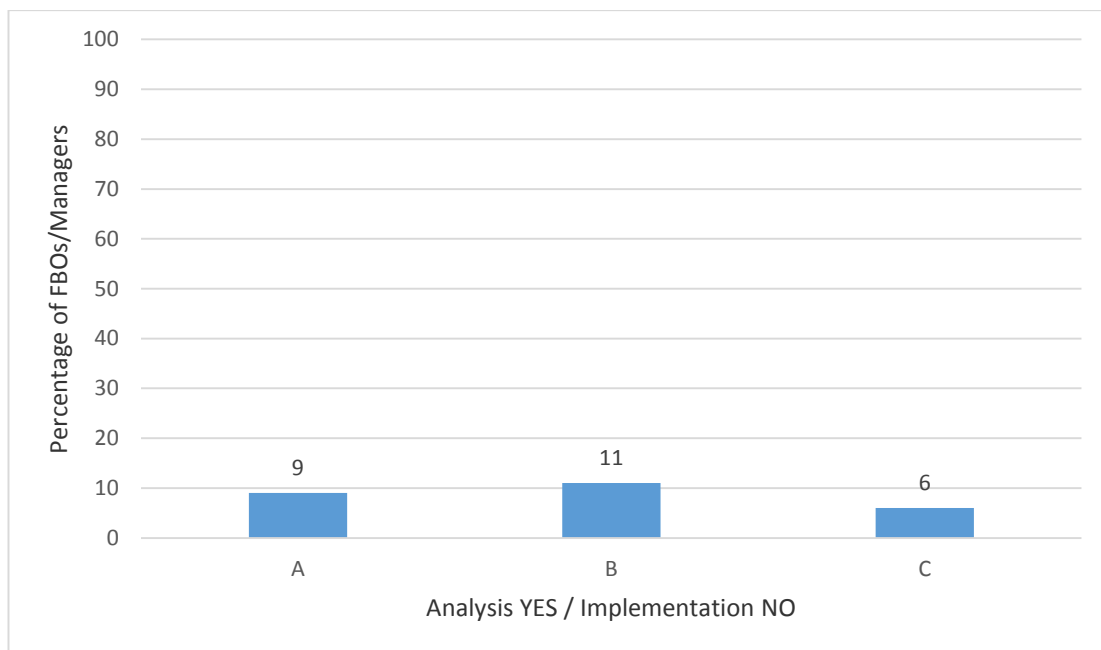


Figure 54. Percentage of FBOs / managers who had undertaken an analysis of food safety hazards but had not implemented controls at critical points

### 3.15.3 Analysis NO / Implementation YES

Such FBOs had not undertaken an analysis of the food safety hazards in order to identify the appropriate controls, but had implemented effective controls at critical points to eliminate or reduce food safety hazards to an acceptable level (see Figure 55 and Appendix 57).

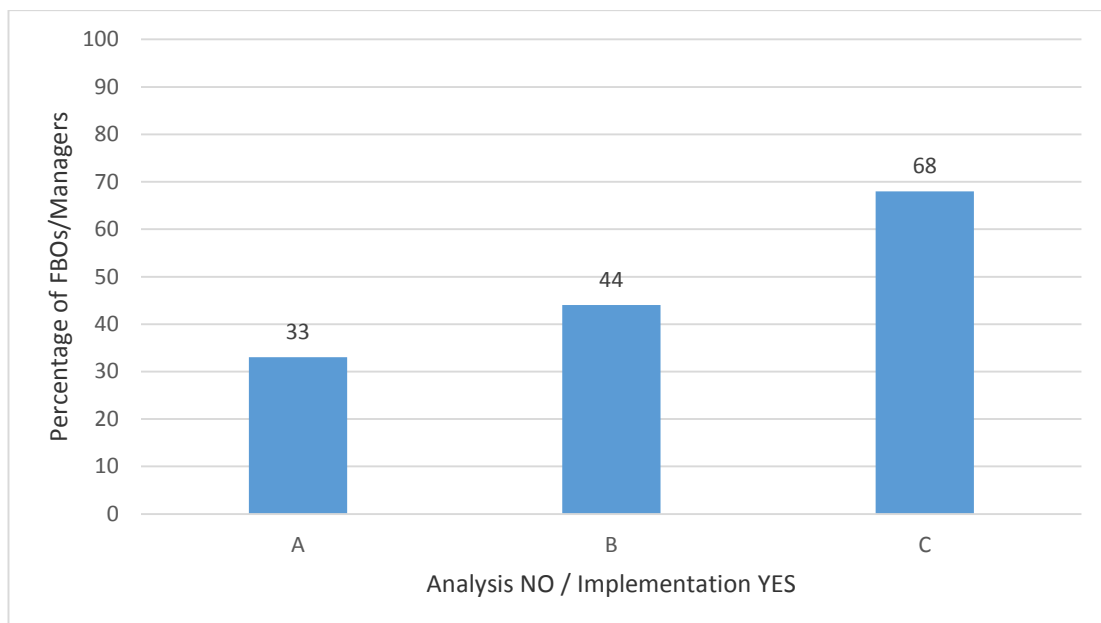


Figure 55. Percentage of FBOs / managers who had not undertaken an analysis of food safety hazards but had implemented controls at critical points

#### 3.15.4 Analysis YES / Implementation YES

Such FBOs had undertaken an analysis of the food safety hazards in order to identify the appropriate controls and had implemented effective controls at critical points. Food businesses meeting these criteria were found to be a small minority in all risk rating categories (see Figure 56 and Appendix 58).

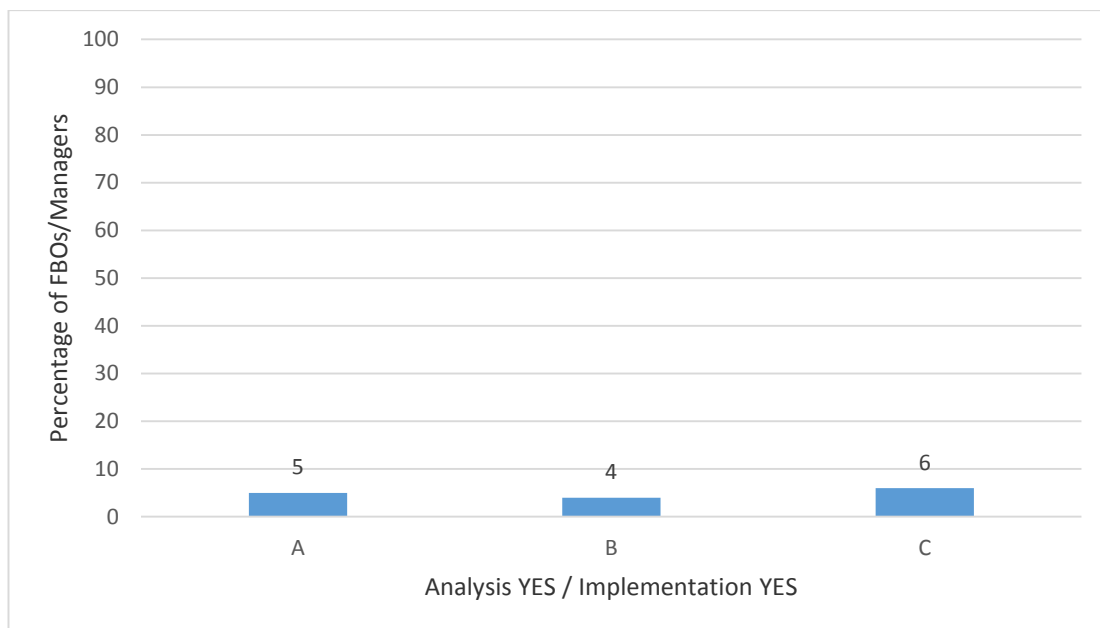


Figure 56. Percentage of FBOs / managers who had undertaken an analysis of food safety hazards and implemented controls at critical points

### 3.16 A quantitative assessment of the lack of knowledge of hazard analysis/ HACCP fundamentals in non-compliant food businesses

The extent of non-compliance with the hazard analysis requirement was high amongst the food businesses of the study populations. The research identified a lack of knowledge of the essential features of hazard analysis / HACCP in the non-compliant food businesses as detailed below.

### 3.16.1 Awareness of the term hazard analysis / HACCP

Within the A and B risk rated categories, a majority of FBOs / managers had not heard of the term hazard analysis / HACCP in relation to food safety. In the case of the C risk rated category, the majority of FBOs / managers had heard of the term (see Figure 57 and Appendix 59).

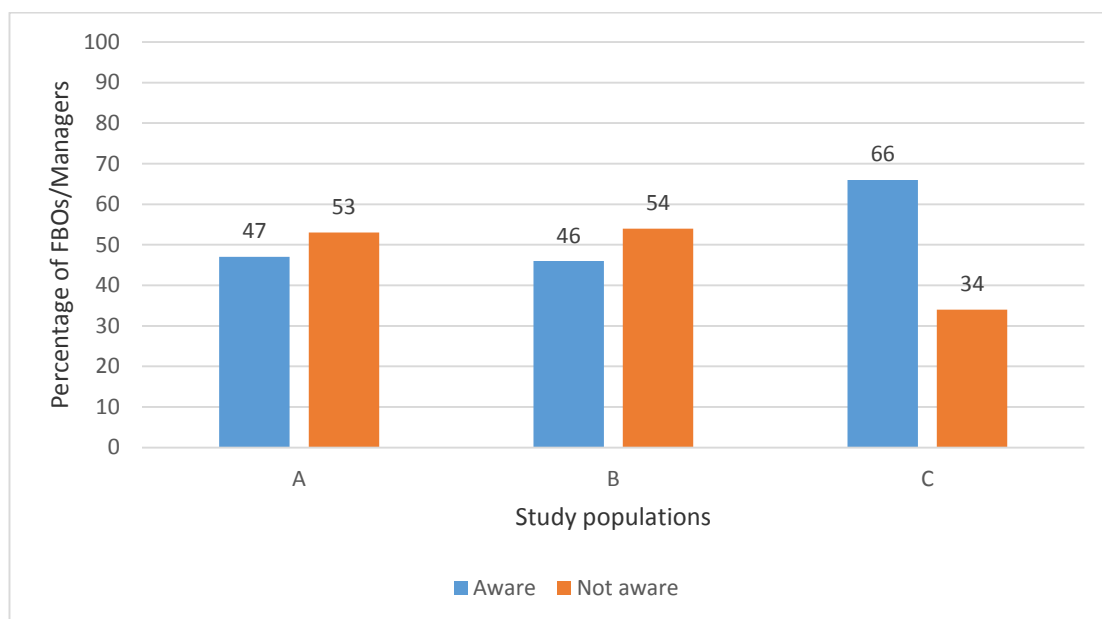


Figure 57. Awareness of FBOs / managers of the term HACCP or hazard analysis

### 3.16.2 Meaning of the term hazard analysis / HACCP

A constraint in the implementation of Reg 4.(3) and other HACCP based systems within all risk rated categories was the inability of FBOs / managers to understand the meaning of the term hazard analysis / HACCP.

Within all risk rated categories only a small percentage of FBOs / managers were able to correctly define the term. A higher percentage of FBOs / managers were able to partially define the term (see Figure 58 and Appendix 60).

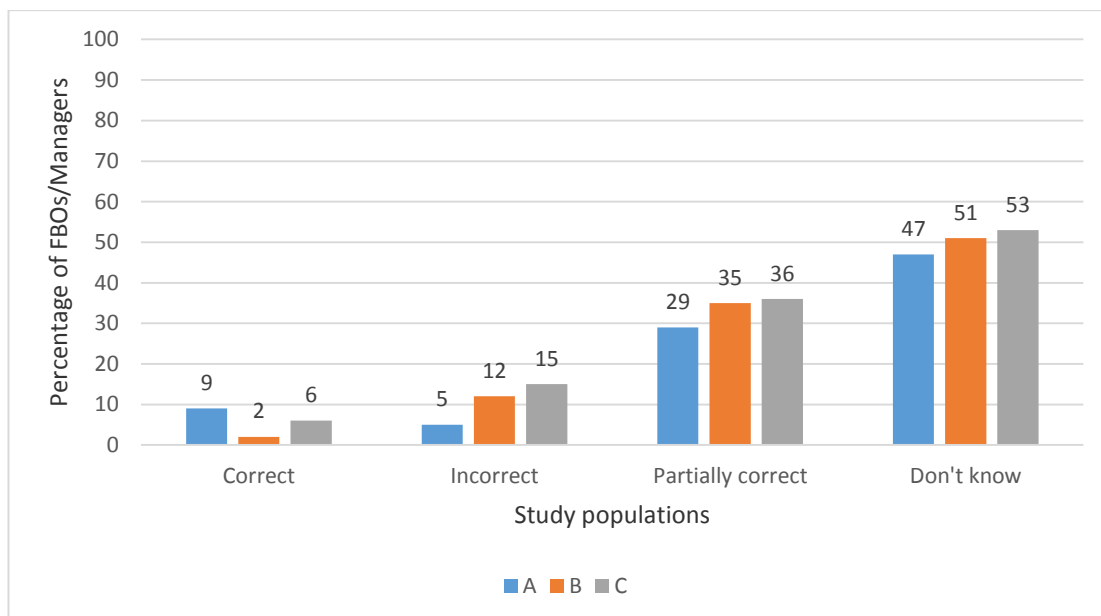


Figure 58. Ability of FBOs / managers to define the term HACCP or hazard analysis

Examples of such incorrect definitions from FBOs/ managers included the following:

*“Identify problems of food”* (Manager of a public house, risk rated B)

*“Taking care when preparing food”* (FBO, Thai restaurant, risk rated C)

*“Looking after food”* (Manager of takeaway pizza food business, risk rated C).

### 3.16.3 Awareness of the legal obligation to implement a HACCP based food safety management system

When a simple explanation of hazard analysis / HACCP based systems was provided to the interviewee, a constraint in the implementation of hazard analysis / HACCP based systems became apparent. This was ignorance on the part of those FBOs / managers who were unaware of their legal obligation to implement such a system within their food business, resulting in them taking no action to achieve compliance.

Just over a quarter of FBOs / managers in A risk rated food businesses were aware of this obligation, but the proportions were substantially higher in the B and C categories

(see Figure 59 and Appendix 61). A minority of FBOs / management representatives within all risk rated categories believed that hazard analysis was not a legal requirement.

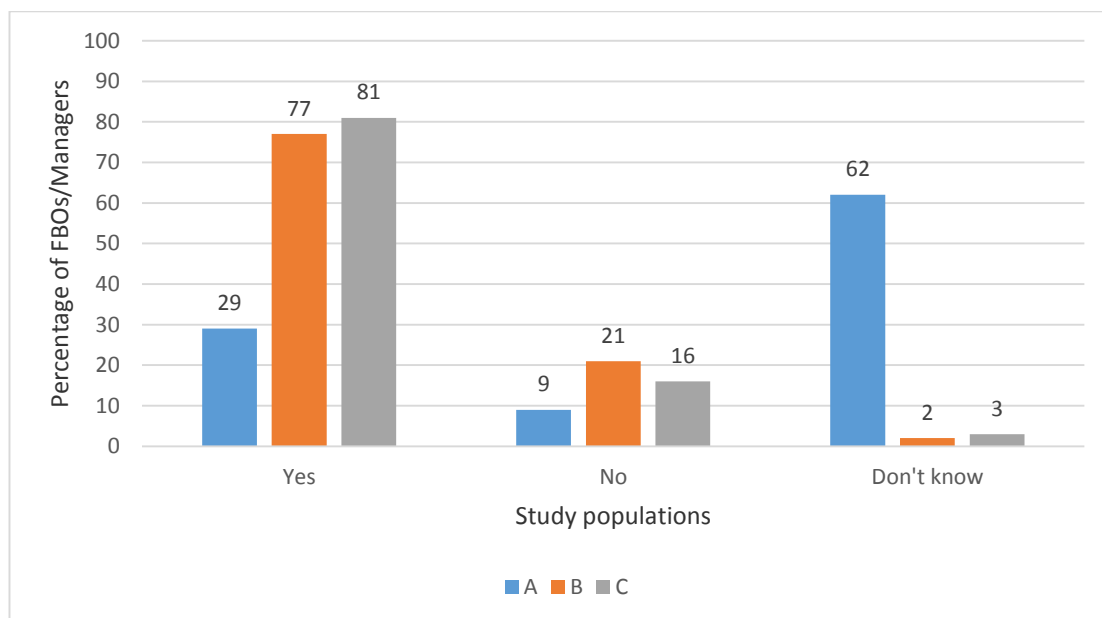


Figure 59. Awareness of FBOs /managers of the legal requirement to implement a HACCP based system

### 3.16.4 FBOs / managers who stated they operated a hazard analysis / HACCP system within their food business

When a simple explanation was provided to the interviewee, there was a significant level of mistaken belief amongst FBOs / managers in all risk rated categories that they operated a hazard analysis / HACCP based system within their food businesses (see Figure 60 and Appendix 62).

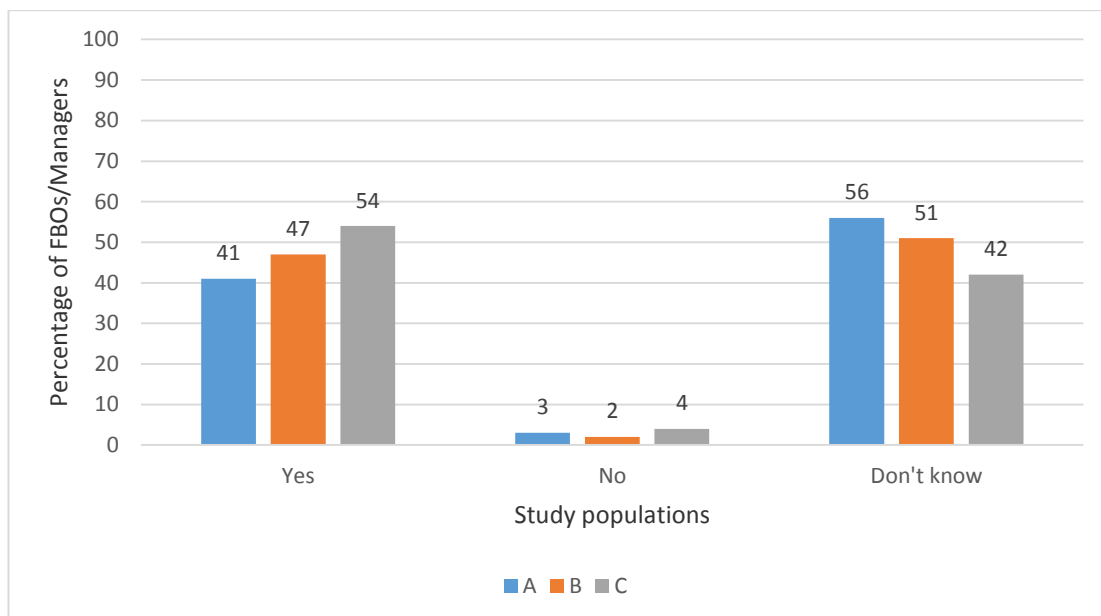


Figure 60. Percentage of FBOs / managers who stated they operated a hazard analysis / HACCP based system

### 3.16.5 FBOs / managers who stated they had received specific training in hazard analysis / HACCP

When a simple explanation was provided to the interviewee, some FBOs / managers in all risk categories stated that they had received training in hazard analysis / HACCP based systems. Such training included in-house and external courses. It was interesting to note that a significant number of FBOs / management representatives stated that they had received such training during a CIEH Level II (Foundation Level) food hygiene qualification course, when hazard analysis / HACCP, although mentioned, does not form part of the syllabus of Level II courses (see Figure 61 and Appendix 63).

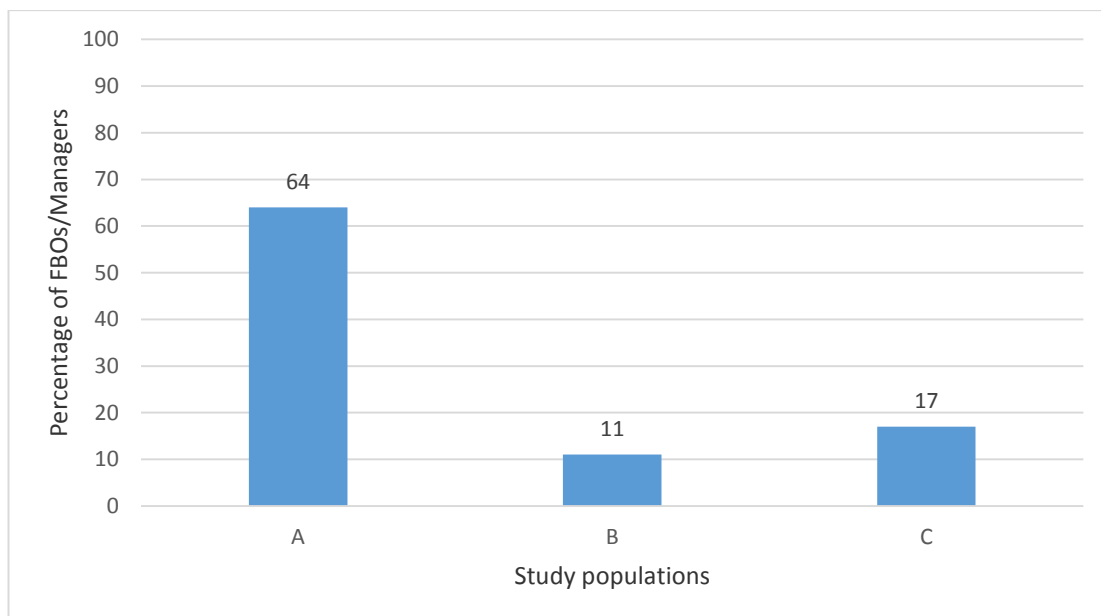


Figure 61. Percentage of FBOs / managers claiming to have received specific training in hazard analysis / HACCP from Level II food hygiene training

### 3.16.6 Sources of food safety / hygiene information

FBOs / managers obtained food hygiene information from a variety of sources, including recognised food hygiene training courses, the FSA and the LBC, who were the food authority undertaking programmed inspections.

The main source of food safety / hygiene information was the CIEH Level II food hygiene qualification course, which equated to 6 hours of basic food hygiene training. The contents of this course focus mainly on food hygiene prerequisites.

There was little reliance on either the local authority or the FSA as sources of food safety information, these combined sources being identified by only a minority of FBOs / managers. This finding was surprising since the FSA regularly sent out mail shots on food safety matters to all known registered food businesses within England and Wales (see Figure 62 and Appendix 64).

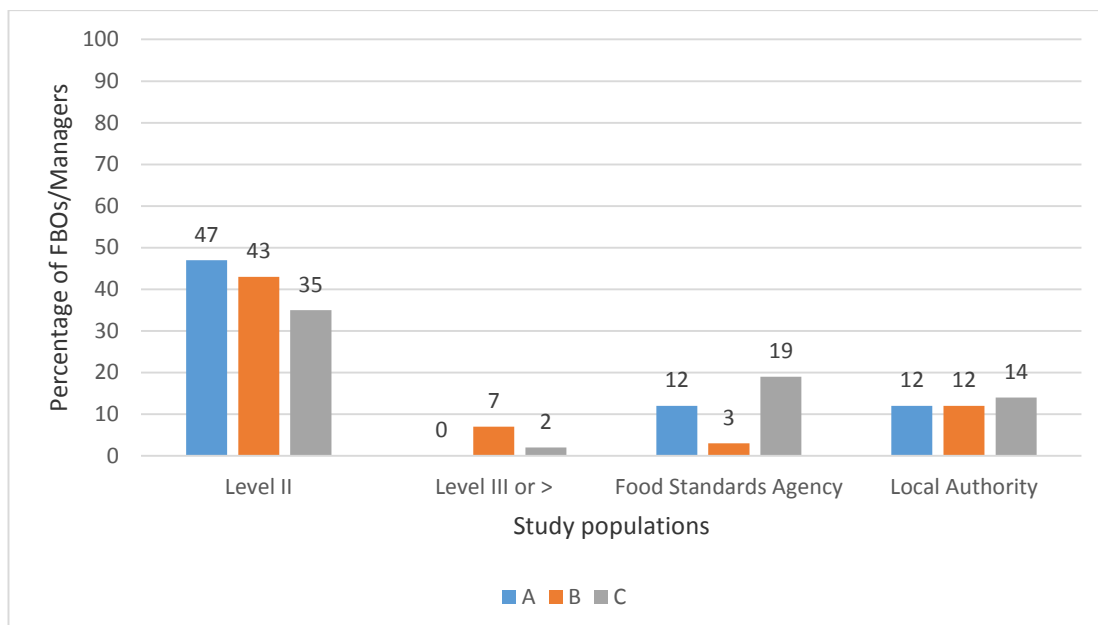


Figure 62. Sources of known food safety / hygiene information

Equally surprising was the extent of reliance on the local authority – the food authority responsible for enforcing the Food Safety Act 1990 and all relevant subordinate legislation. This was identified by a minority of FBOs / managers. FSOs from the LBC regularly visited all known registered food businesses as part of the programmed food hygiene inspection programme. The food businesses were subjected to programmed food hygiene inspections at periods of between 6 and 18 months in accordance with the Food Safety Act 1990 Code of Practice (see Chapter 2. 2.3).

### **3.17 The specific constraints hindering hazard analysis / HACCP implementation in the non-compliant food businesses of the study populations**

#### **3.17.1 Constraint 1. Terminology**

Terms such as hazard, control point, CCP, monitoring and review were understood by a lower percentage of FBOs / managers in the A risk rated category than FBOs / managers in lower risk rated categories. During the pilot trials for the development of the questionnaire the actual wording used in the legislation was also little understood by FBOs / managers (see Figure 63 and Appendix 65).

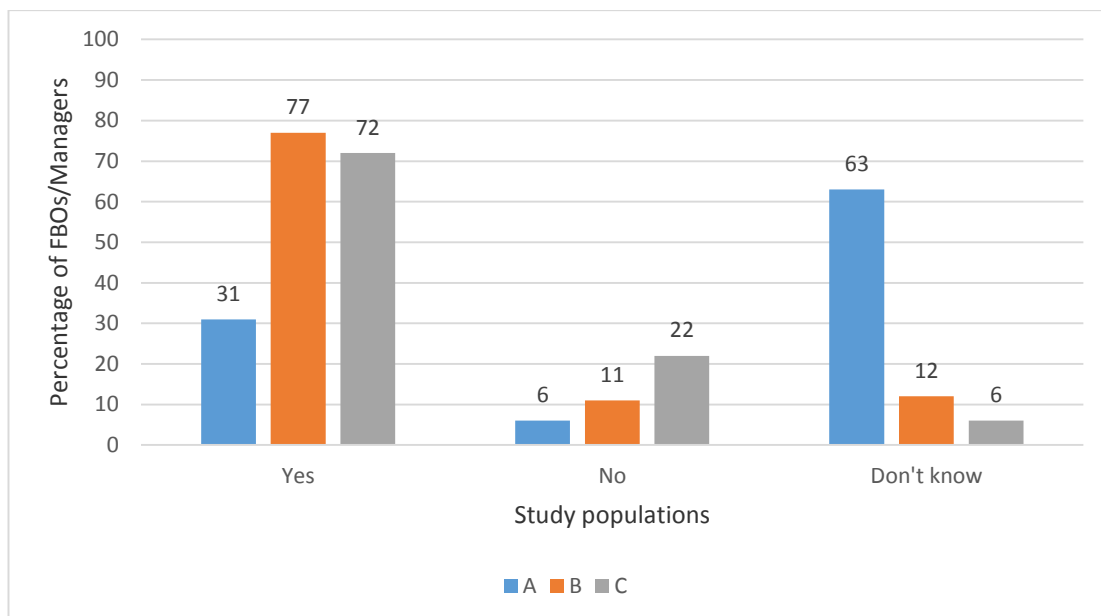


Figure 63. Percentage of FBOs / managers who stated terminology was a constraint in the implementation of a hazard analysis / HACCP based system within their food business

### 3.17.2 Constraint 2. Finance

Within the all risk rated categories, finance was considered to be a constraint in only a minority of food businesses (see Figure 64 and Appendix 66).

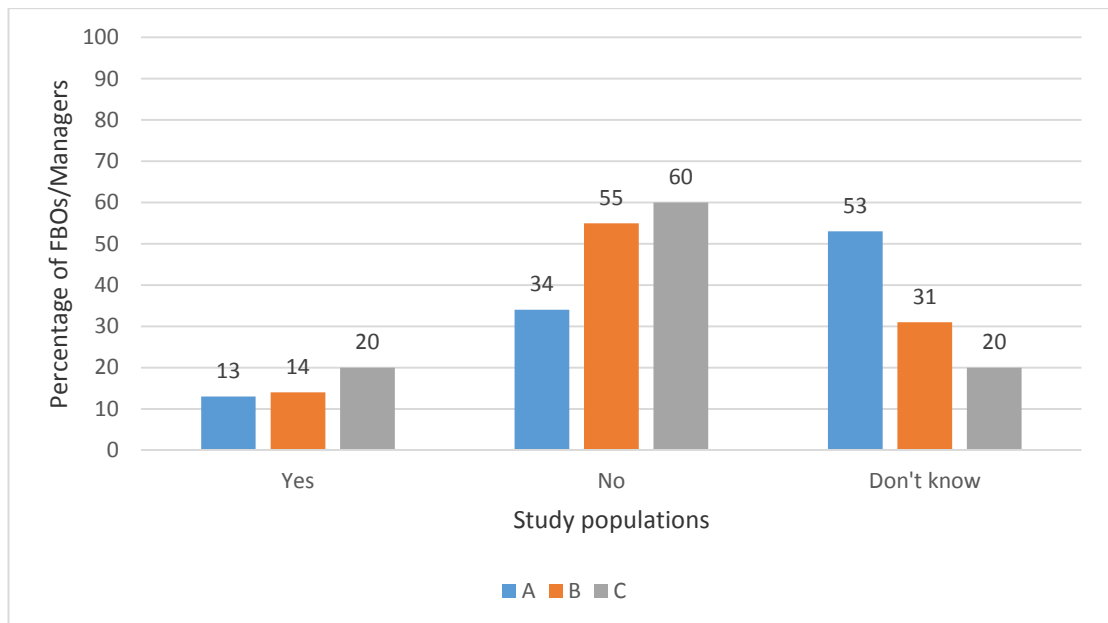


Figure 64. Percentage of FBOs / managers who stated that finance was a constraint in the implementation of a hazard analysis / HACCP based system

### 3.17.3 Constraint 3. Obtaining hazard analysis / HACCP training

Locating an appropriate training resource for the implementation of HACCP based systems was a constraint within all risk rated categories. This constraint was identified by a higher percentage of B and C food businesses than the higher risk rated A food businesses (see Figure 65 and Appendix 67).

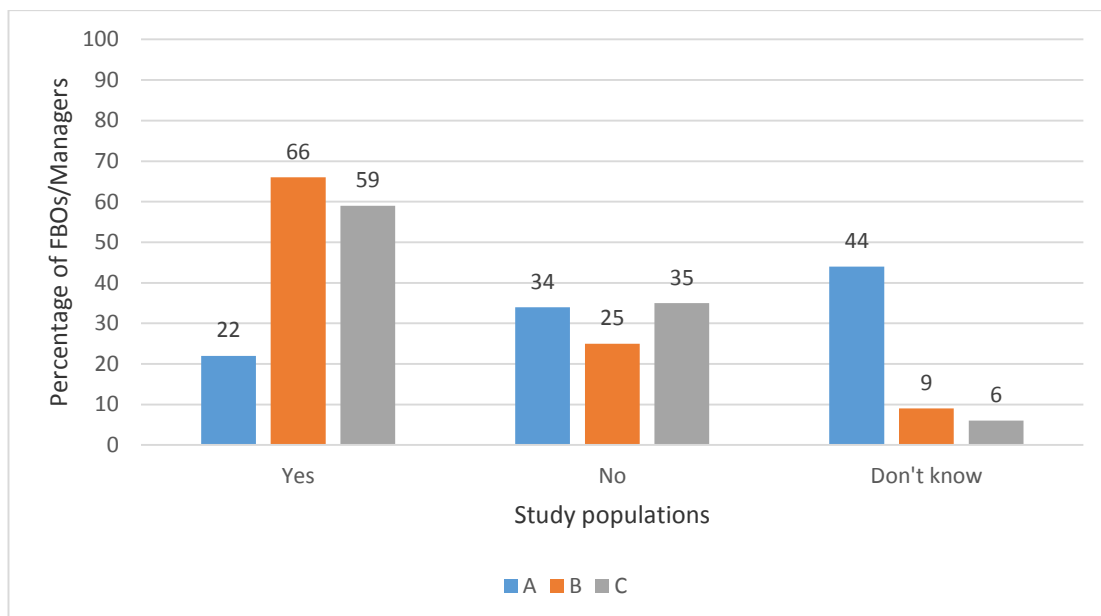


Figure 65. Percentage of FBOs / managers who stated that obtaining hazard analysis / HACCP training was a constraint in the implementation of a hazard analysis / HACCP based system within their food business

#### 3.17.4 Constraint 4. Lack of useful information regarding hazard analysis / HACCP

Lack of useful information and technical expertise to a level where the FBO/manager would be conversant with the hazard analysis / HACCP requirement was a constraint in the implementation of HACCP based systems (see Figure 66 and Appendix 68).

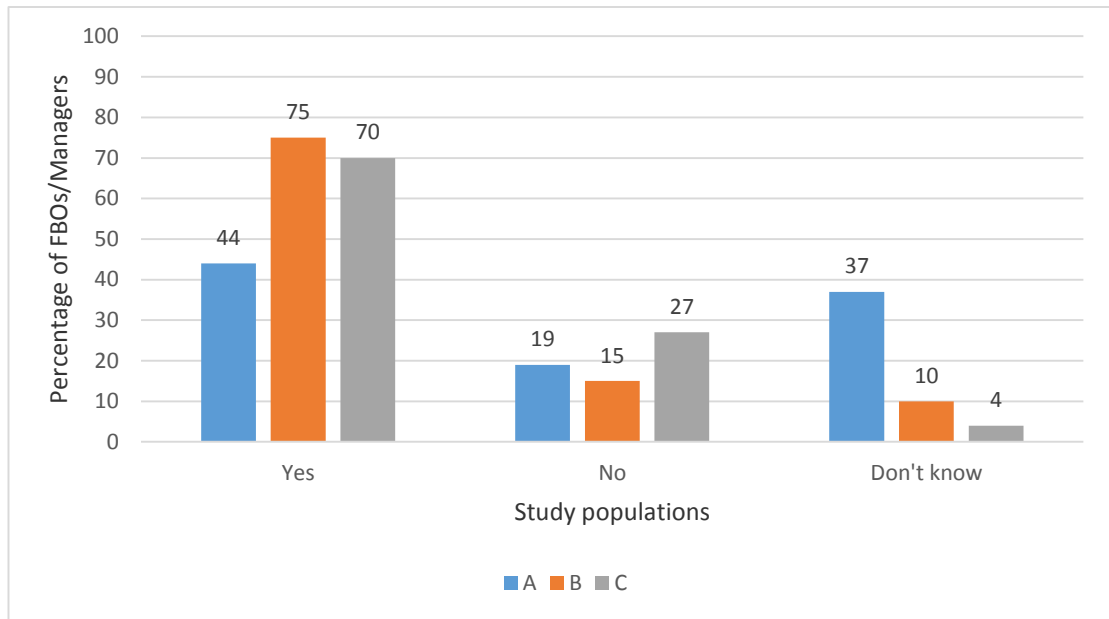


Figure 66. Percentage of FBOs / managers who stated that a lack of useful information was a constraint in the implementation of a hazard analysis / HACCP based system within their food business

### 3.17.5 Constraint 5. Lack of practical guidance regarding hazard analysis / HACCP

Lack of practical guidance, defined in this research as the absence of assistance, instruction and direction, was a constraint identified by more than half of the food businesses (see Figure 67 and Appendix 69).

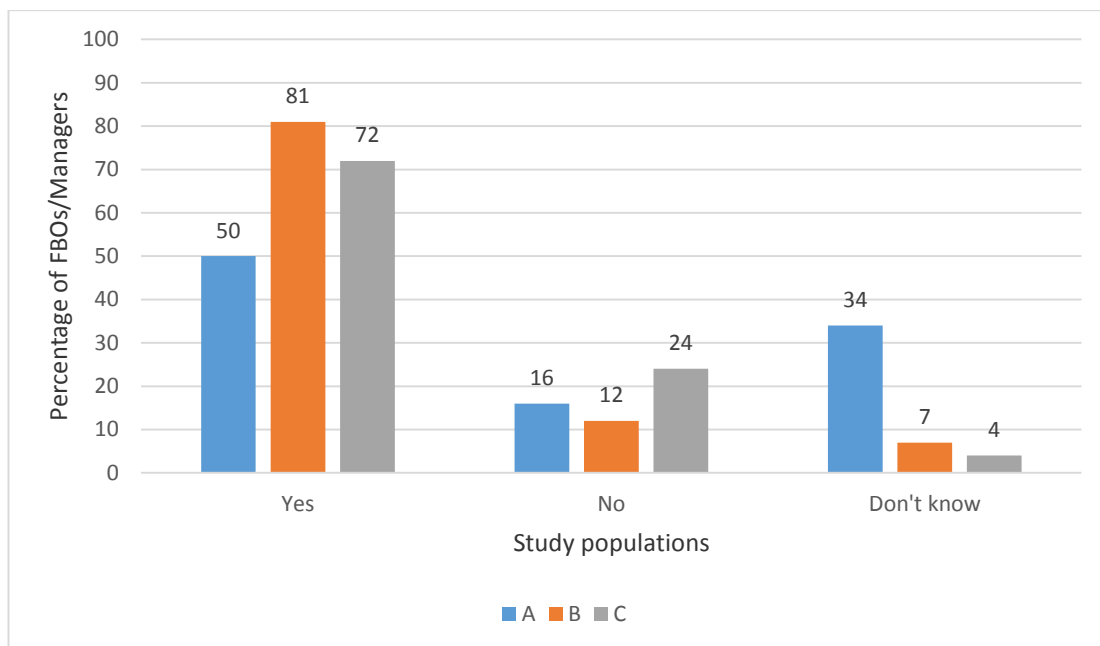


Figure 67. Percentage of FBOs / managers who stated that lack of practical guidance was a constraint in the implementation of a hazard analysis / HACCP based system within their food business

### 3.17.6 Constraint 6. Inadequate knowledge and technical expertise regarding hazard analysis / HACCP based systems

There was a significant lack of knowledge amongst FBOs / managers in all risk rated categories in relation to the process of implementation of hazard analysis / HACCP based systems. When the numbers of FBOs / managers who answered “Don’t Know” were considered with those who accepted they had inadequate knowledge this resulted in this constraint having greater significance (see Figure 68 and Appendix 70).

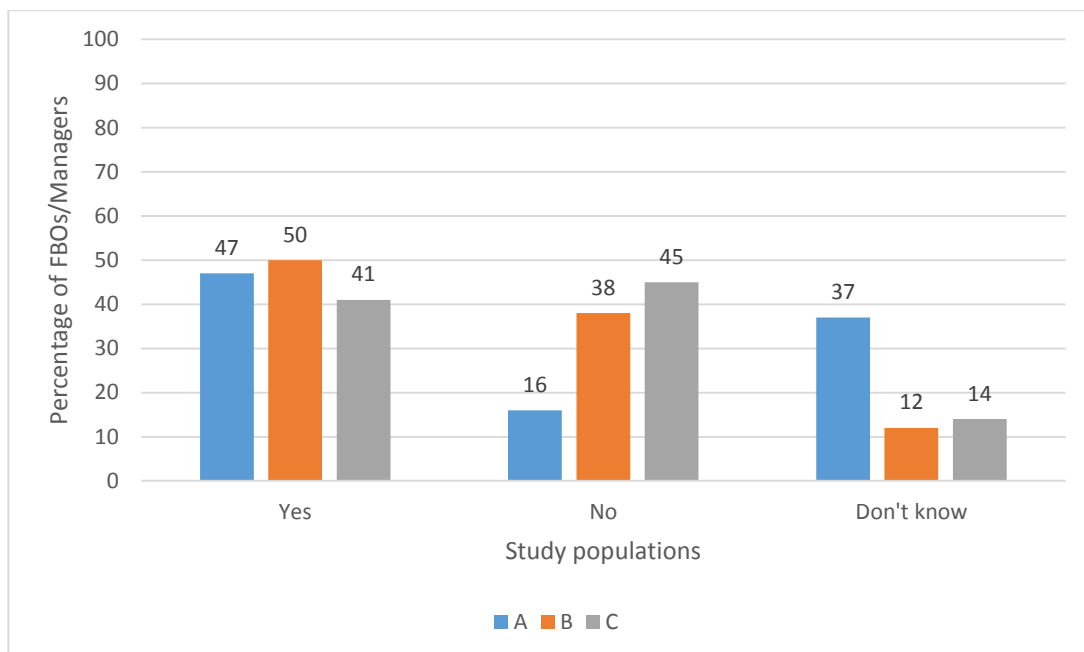


Figure 68. Percentage of FBOs / managers who stated that they possessed inadequate knowledge of the implementation of hazard analysis / HACCP based systems

### 3.17.7 Constraint 7. More pressing business priorities

SMEs are a heavily regulated sector (Better Regulation Taskforce, 2000). As stakeholders in a business within such an environment, FBOs need to achieve regulatory compliance with a wide range of legislation, each imposing its own regulatory burdens.

Non-food business related priorities were stated to be a constraint by less than a quarter of all FBOs / managers in all risk rated categories (see Figure 69 and Appendix 71). Again a significant proportion of FBOs / managers provided a “Don’t Know” response to the question.

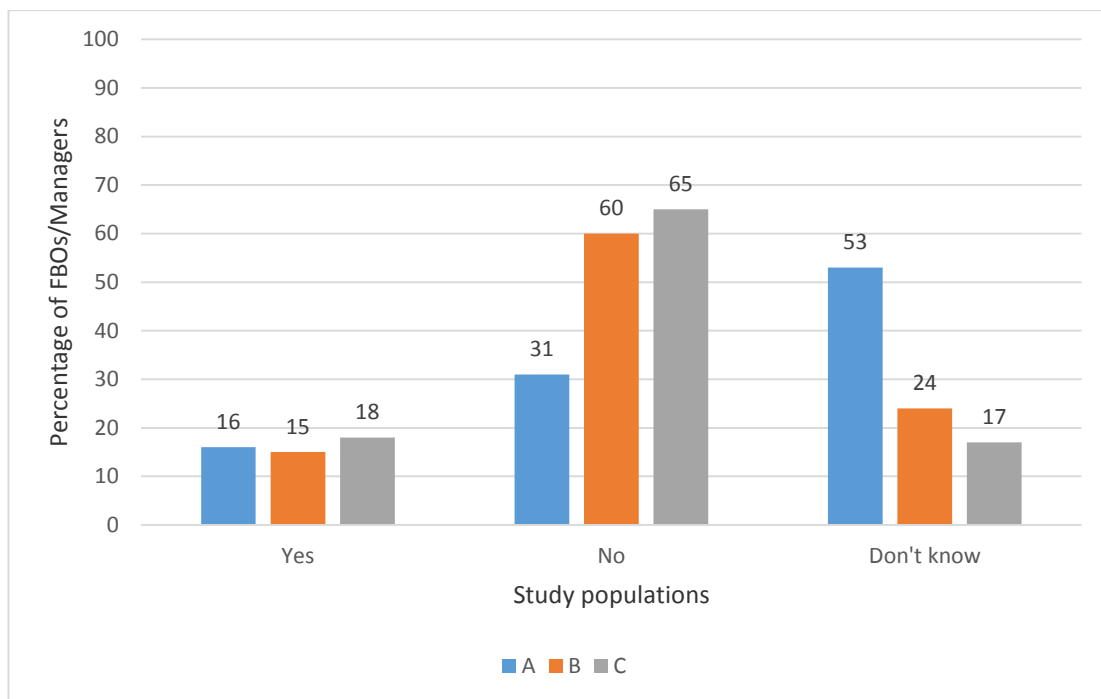


Figure 69. Percentage of FBOs / managers who stated more pressing business priorities were a constraint in the implementation of a hazard analysis / HACCP based system within their food business

### 3.17.8 Constraint 8. Staff turnover

Staff turnover was identified as a constraint by less than a quarter of all FBOs / managers within all risk rated categories (see Figure 70 and Appendix 72).

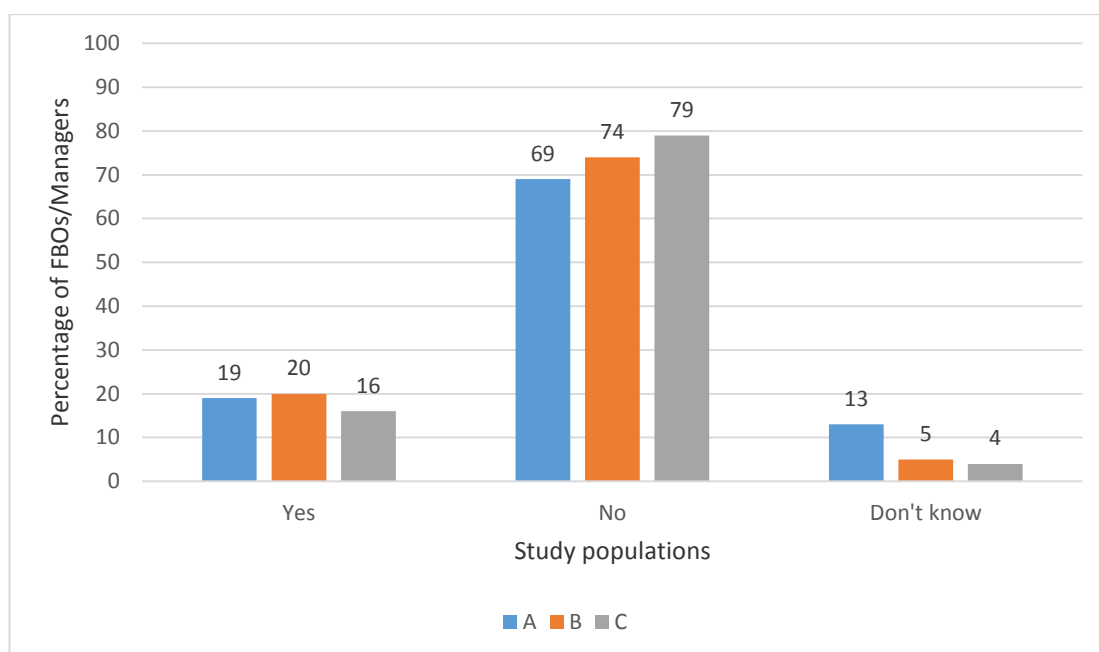


Figure 70. Percentage of FBOs / managers who stated that staff turnover was a constraint in the implementation of a hazard analysis / HACCP based system within their food business

### 3.17.9 Constraint 9. Feelings that hazard analysis was a waste of time

Only a small percentage of FBOs / managers in all risk categories stated that hazard analysis / HACCP was a waste of time. This finding is qualified by a significant percentage of FBOs / managers within all risk rated categories who provided a “Don’t know” response to this question (see Figure 71 and Appendix 73).

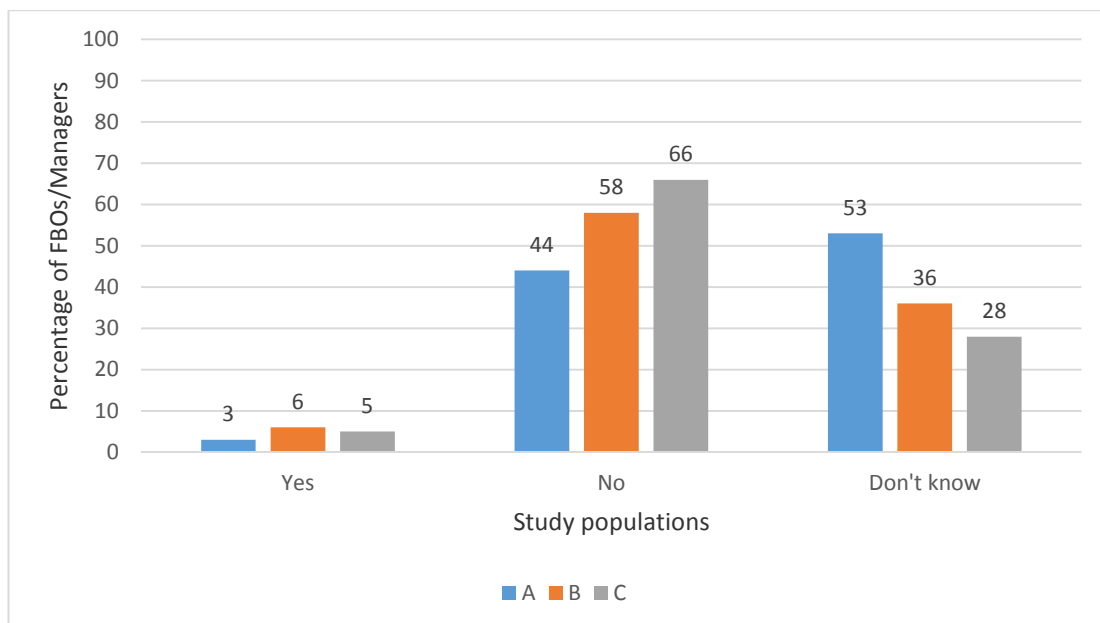


Figure 71. Percentage of FBOs / managers who stated that a hazard analysis / HACCP based system within their food business was a waste of time

### 3.17.10 Constraint 10. Inadequate assistance from Food Safety Enforcement Officers

Within the A risk rated category a quarter of the FBOs / managers were of the view that they received inadequate assistance from Food Safety Enforcement Officers. Smaller proportions of FBO/ managers from the B and C risk rated categories expressed the same view (see Figure 72 and Appendix 74).

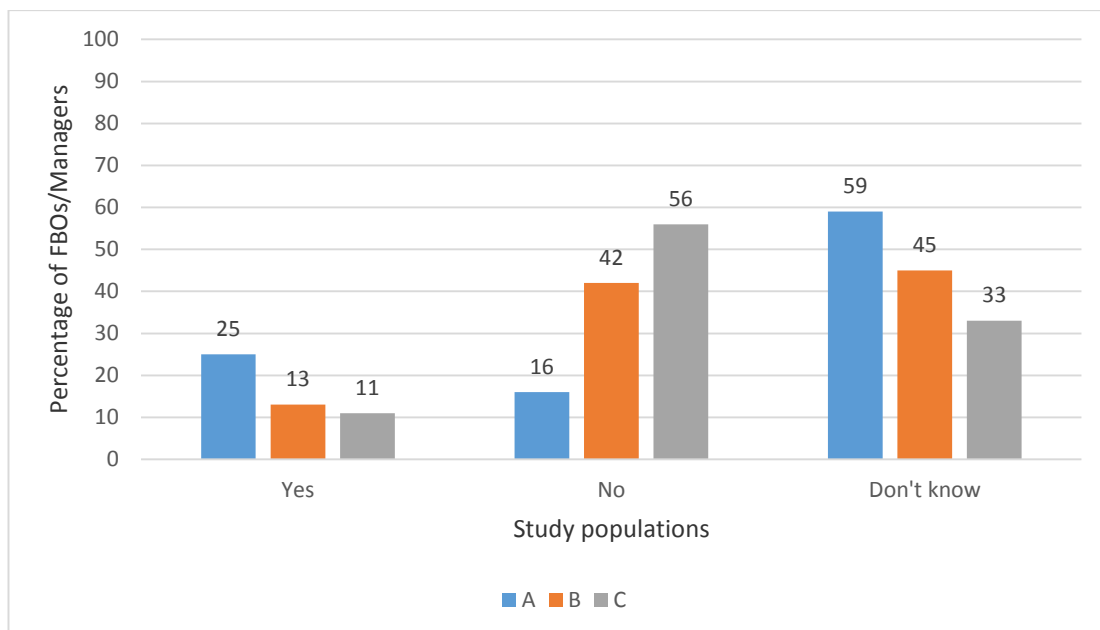


Figure 72. Percentage of FBOs / managers who stated that inadequate assistance from Food Safety Enforcement Officers was a constraint in the implementation of a hazard analysis / HACCP based system within their food business

### 3.17.11 Constraint 11. Time

Over a quarter of all food businesses found that the time spent implementing what they believed was a hazard analysis / HACCP based system to be a constraint (see Figure 73 and Appendix 75). It is known that food businesses such as restaurants are heavily regulated (Better Regulation Taskforce, 2000). Food safety, including the implementation of a hazard analysis / HACCP based system, formed only a small part of the regulatory burdens on SME food businesses. Therefore time was a relevant constraint.

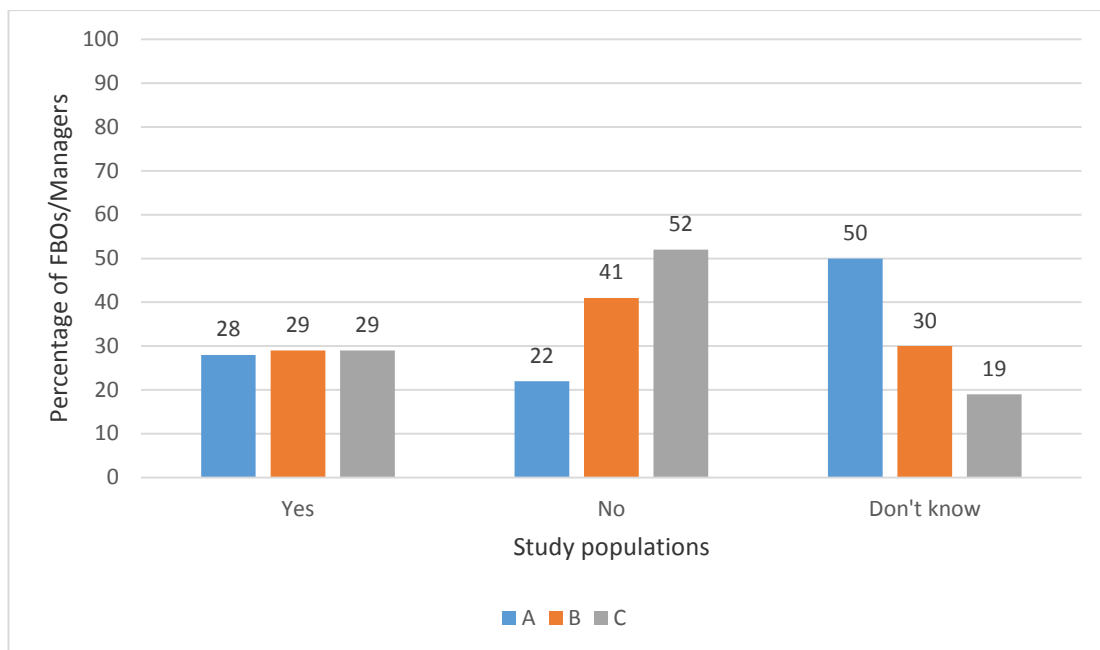


Figure 73. Percentage of FBOs / managers who stated that time was a constraint in the implementation of a hazard analysis / HACCP based system within their food business

### 3.17.12 Other constraints

Other constraints were not identified in any A risk category businesses and in only a very small proportion of B and C risk rated businesses. Therefore such constraints were not pursued further in this research. This low proportion needs to be considered along with the significant percentage of FBOs / managers who answered the question with a “Don’t Know” response, indicating a lack of knowledge regarding HACCP based systems (see Appendix 76).

### 3.18 The motivators for FBOs implementing a hazard analysis / HACCP based system within their food businesses

This research aimed to identify and quantify the main motivators for the implementation of hazard analysis / HACCP based systems in all risk rated categories. Due to the low level of compliance with the hazard analysis/ HACCP requirement within the study populations, a decision was made to include both compliant and non-compliant food businesses. The purpose of the inclusion was to elicit a larger number of responses for analysis.

In order to reduce inconsistency in interpreting the meaning of hazard analysis / HACCP based systems, a simple explanation was provided by the researcher before this question was put to the respondents. Identical wording was used in all interviews in order to promote understanding on the part of the respondents.

### 3.18.1 Motivator 1. Avoidance of enforcement action

Within all risk rated categories only a small minority of FBOs / managers gave the avoidance of enforcement action as the main reason for compliance (see Figure 74 and Appendix 77).

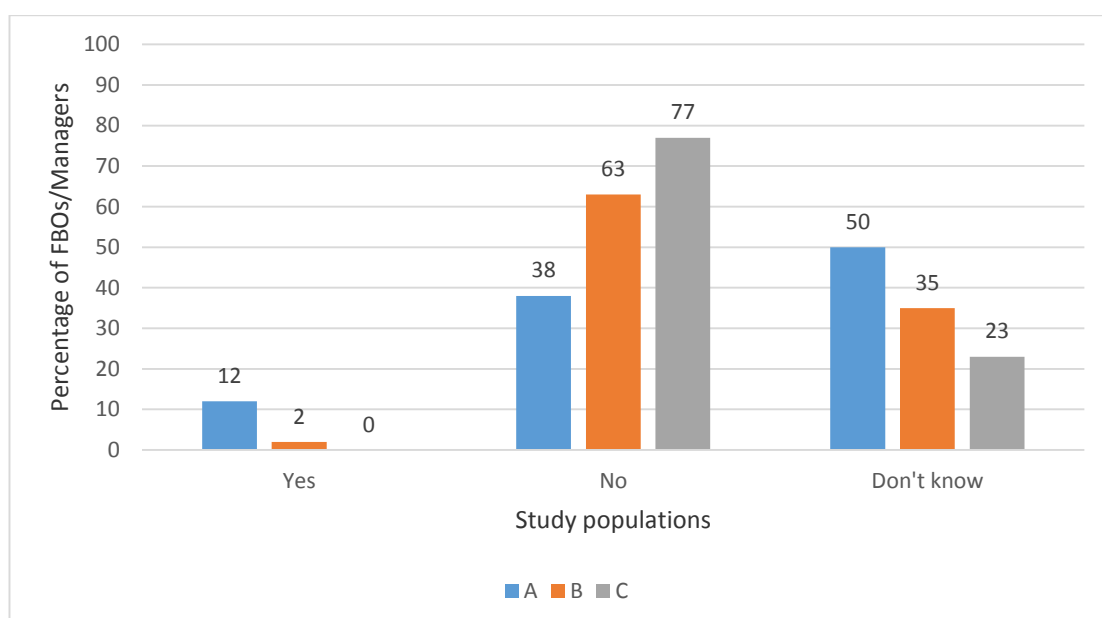


Figure 74. Percentage of FBOs / managers who stated that avoidance of enforcement action was the main reason for the implementation of a hazard analysis / HACCP based system within their food business

### 3.18.2 Motivator 2. As a method of producing safe food

This response was provided by a minority of FBOs / managers within all risk rated categories (see Figure 75 and Appendix 78).

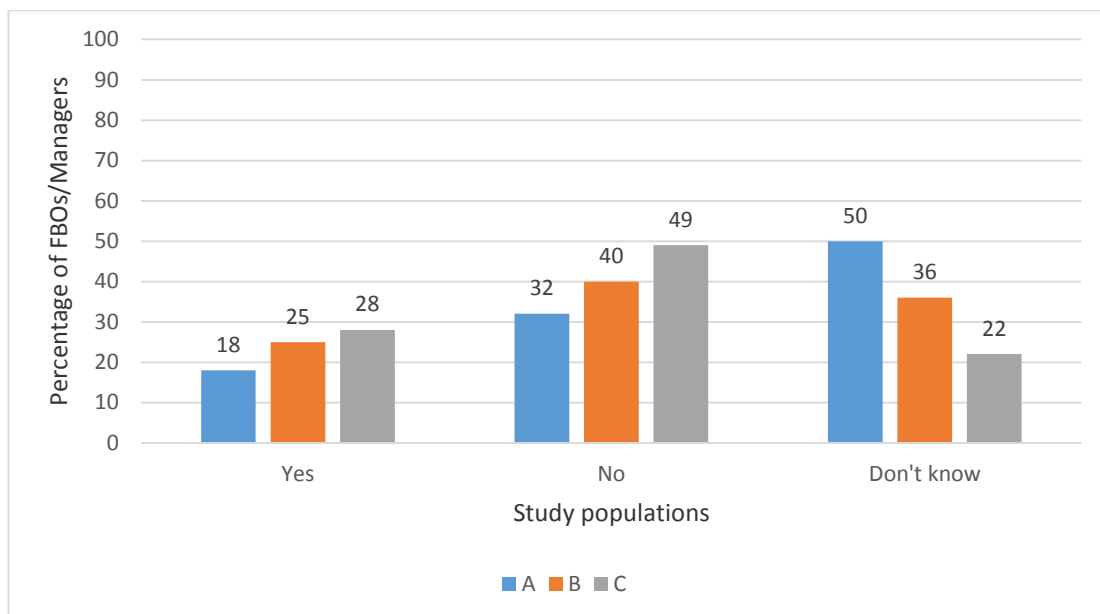


Figure 75. Percentage of FBOs / managers who stated that the production of safe food was the main reason for the implementation of a hazard analysis / HACCP based system within their food business

### 3.18.3 Motivator 3. To both avoid enforcement action and produce safe food

A composite of the motivators 1 and 2 produced the highest response. Within all risk rated categories, the main motivator towards compliance was found to be a mixture of the avoidance of enforcement action and the desire to produce safe food, rather than these components in isolation (see Figure 76 and Appendix 79).

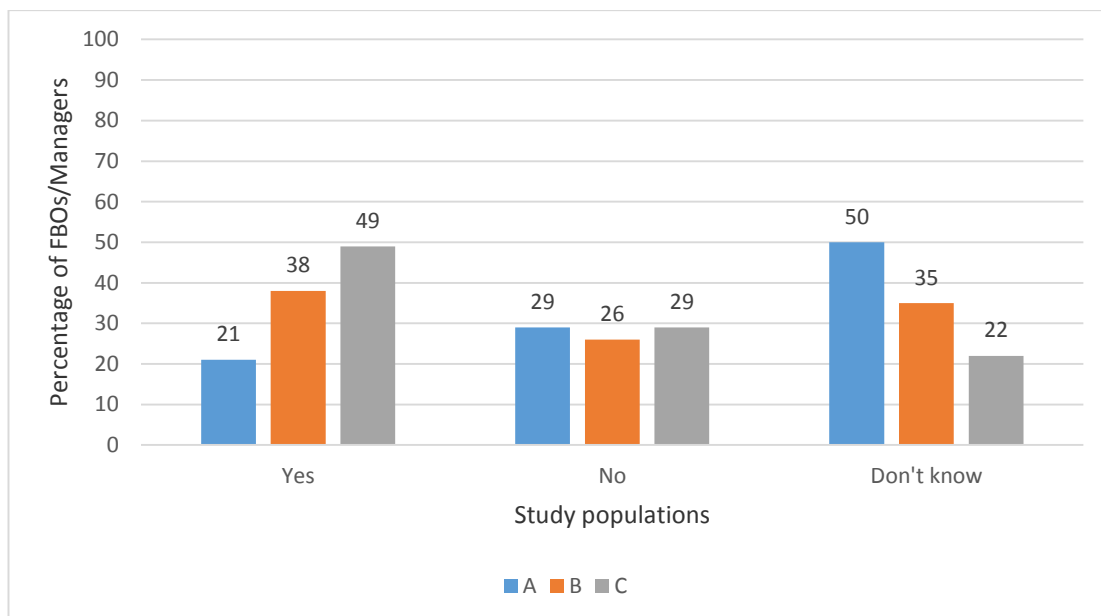


Figure 76. Percentage of FBOs / managers who stated that a combination of both the avoidance of enforcement action and the production of safe food was the main reason for the implementation of a hazard analysis / HACCP based system within their food business

### 3.19 The level of assistance provided by Food Safety Officers in the implementation of hazard analysis / HACCP systems

Although FSOs were not under any statutory obligation to provide assistance to FBOs in the implementation of HACCP based systems, a significant number of FBOs / managers in all risk rated categories stated that FSOs should have provided additional assistance (see Figure 77 and Appendix 80).

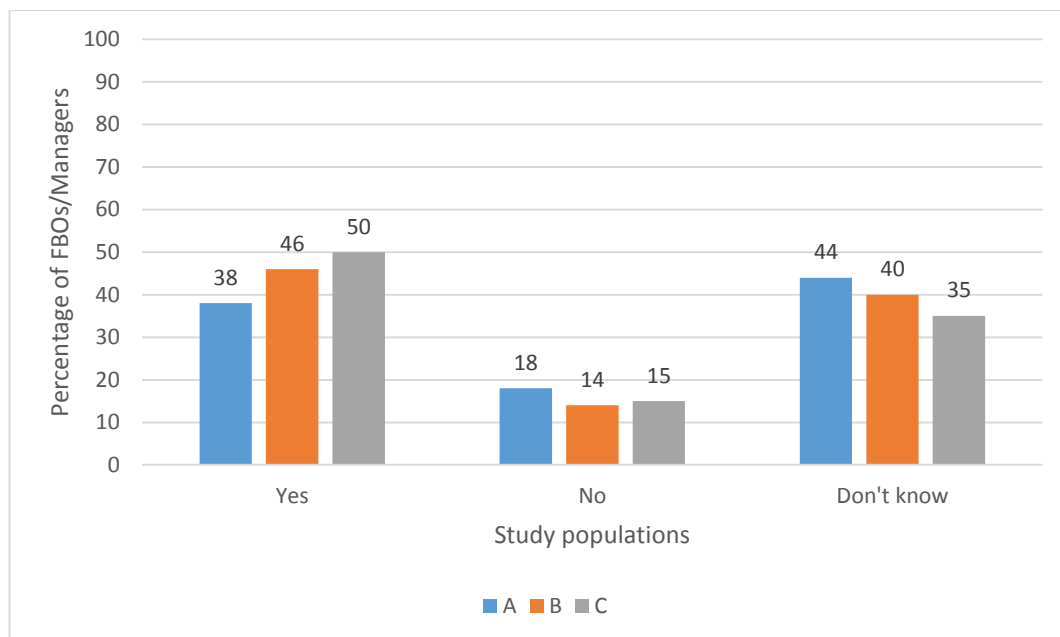


Figure 77. The percentage of FBOs / managers who believed that Food Safety Officers should provide more assistance in the implementation of hazard analysis / HACCP based systems

### 3.20 Willingness of FBOs to allocate additional financial resources to implement or improve their hazard analysis / HACCP system

There was a willingness amongst FBOs / managers to allocate additional financial resources to implement or improve their existing hazard analysis / HACCP systems in over half of the B and C risk rated food businesses (see Figure 78 and Appendix 81).

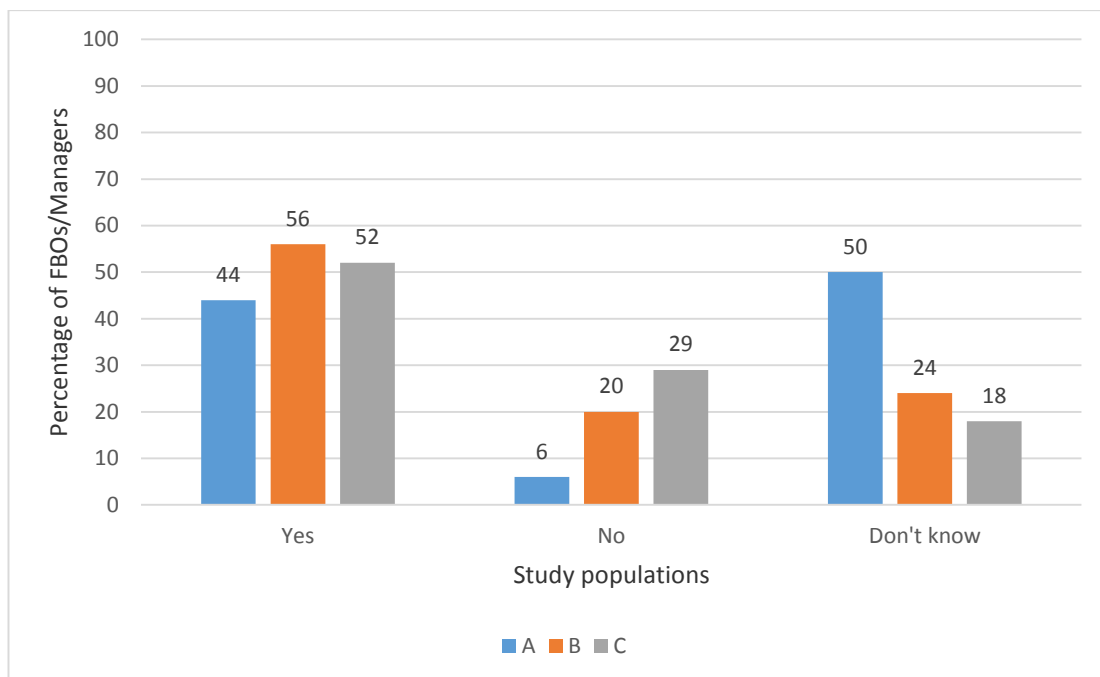


Figure 78. The percentage of FBOs / managers willing to allocate additional Financial resources to implement or improve their hazard analysis / HACCP system

### 3.21 The Intervention Project

#### 3. 21.1 Results

Of the 190 food businesses invited, 92 (48 %) attended the coaching sessions.

Following the coaching sessions, 14 of the attendee food businesses did not receive a follow up coaching visit from the researcher due to the non-availability of the FBO / manager, or because the food business had ceased trading. Therefore the results were based on 78 A or B risk rated food businesses.

The improvement in food safety standards was objectively assessed by the researcher using the risk rating standards of the Food Safety Act 1990 COP as a baseline for comparison. This allowed the comparison of three components of the HACCP based system (food hygiene and safety, structural compliance and confidence in management) both before and after the Intervention Project. A judgement was then made by the researcher in accordance with the LACOTS hazard analysis outcomes (see Chapter 2, 2.14 and Appendix 55 to 58).

The Intervention Project was considered to be successful in terms of food safety. There was an improvement in risk ratings amongst the attendee food businesses. Of the food businesses involved in the project 89.8 % were assigned lower risk scores, 6.4 % remained unchanged and 3.8 % were assigned higher risk scores (see Appendix 90).

These improvements resulted in 84.6% of food businesses being placed in a lower risk rated category (i.e. from A to B or B to C), 14.1% remaining in the same risk category and 1.3 % being assigned to a higher risk category due to a deterioration in food safety standards (see Appendix 91).

### 3.21.2 Compliance outcomes following the Intervention Project

A summary of compliance outcomes is shown in the table below.

<b>Compliance Situation</b>	<b>Outcome</b>	<b>No and % of Food Businesses following IP</b>
Analysis Yes Implementation Yes	Safe	26 (33%)
Analysis Yes Implementation No	Dangerous	6 (8%)
Analysis No Implementation No	Dangerous	6 (8%)
Analysis No Implementation Yes	Safe?	40 (51%)

Table 4. A summary of compliance outcomes

Following the Intervention Project 33% of the businesses involved would have been regarded as compliant with Reg 4.(3), and therefore safe, according to the LACOTS criteria (see Chapter 2, 2.14). However, a further 51% of businesses also had effective controls and monitoring procedures in place. As a consequence, it is suggested that these businesses, although non-compliant according to the LACOTS criteria, should also be regarded as safe.

# **Chapter 4**

## **Discussion**

## CHAPTER 4

### 4.0 DISCUSSION

*This chapter investigates the validity of the three hypotheses investigated in this research.*

*It analyses the defined food hygiene prerequisites within the food businesses of the study populations, these being the components that form the foundations of a food safety management system.*

*The hazard analysis process and the extent of compliance are investigated and the constraints hindering compliance are placed in a hierarchical order of significance. The reasons for non-compliance revolved around the emergence of self-regulation and the willingness and capacity of FBOs to comply with their regulatory obligations.*

*Several enforcement models and their relevance to compliance are analysed.*

*An Intervention Project evolved from the findings, which was aimed at increasing the effective implementation of food safety management systems within high-risk food businesses in the LBC. The rationale of the Intervention Project is discussed and its effectiveness evaluated.*

*At the time of writing up the research (2014), the regulatory landscape was complex. The deregulatory environment had the potential to impact on food safety legislation and form an additional barrier to the implementation of HACCP based food safety management systems. The possible impacts of this factor are discussed.*

*This research has centred around three hypotheses. The first was that “Constraints exist that result in making the various components of Regulation 4.(3) too complex for FBOs of small to medium sized enterprises to effectively implement in the absence of extensive or disproportionate resources.”*

Compliance with Reg 4.(3) required a FBO to possess both the capacity to comprehend and implement the requirement and the willingness to comply with the regulatory obligation. Compliance required a FBO to implement the five individual requirements

of Reg 4.(3). Moreover, compliance with these components required the presence of the relevant hygiene prerequisites:

- i. adequate structural condition and layout of the food premises;
- ii. effective cleaning and disinfection of hand and food contact surfaces;
- iii. good personal hygiene of food handlers;
- iv. effective pest control procedures within food premises;
- v. adequate training and supervision of food handlers.

In order to be effective, the hazard analysis process, which leads to the elimination or reduction to a safe level of physical, chemical and microbiological hazards, required the hygiene prerequisites to be in place in a manner appropriate to the nature of the particular food business.

## **4.1 The hygiene prerequisites**

### **4.1.1 Structural condition and layout of food premises**

SME food businesses, especially catering businesses, are likely to produce a large number of different food items in relatively small quantities (North, 1999). The theoretical and practical application of hazard analysis in such food businesses, which incorporate wide ranging menus in restricted space, created difficulties for FBOs in relation to compliance.

In order to reduce the risk of microbiological cross contamination of ready-to-eat food from raw foods, such foods need to be effectively separated. The majority of food businesses of the study populations operated from non-purpose built premises. Such food businesses often had to adapt their operations around the existing internal structures. Examples of unsuitable internal structural layouts were present within all risk categories. This research found that almost half of the A risk rated population had internal structural layouts that were not conducive to hygienic food preparation (see Chapter 3, Figure 12).

In addition to unsuitable internal structural layout, examples of inadequate space to facilitate hygienic food practices were present within some food businesses of the study populations. This was the case in over half of the A risk category businesses (see Chapter 3, Figure 13). Under such conditions, inadequate separation of raw and ready to eat foods could occur, increasing the risk of contamination of food. Attempting to implement a HACCP based system, in the absence of a suitable internal layout, was difficult for FBOs.

Inadequate cleanliness of the internal structure of premises was found in all risk rated categories, with nearly a quarter of the A risk rated food businesses having unsatisfactory standards of cleanliness of the internal structure of food rooms (see Chapter 3, Figure 11).

#### **4.1.2 Cleaning and disinfection of hand and food contact surfaces**

Only a minority of the food businesses studied had written cleaning schedules as part of their cleaning regime. Evidence obtained from this research has shown that the presence of a cleaning schedule was not a prerequisite for an adequate standard of cleanliness within the food businesses (see Chapter 3, Figure 23). The presence of a cleaning schedule was not a legal requirement during the earlier period of this research and therefore not subject to enforcement action for non-compliance. However, FSOs often recommended the use of a cleaning schedule as part of a management plan to help ensure the cleanliness of the food business. As a consequence a cleaning schedule was sometimes produced merely as a sop to the enforcement officer; this was indicative of the low importance attached to the actual use of written cleaning schedules by a significant number of FBOs/ managers.

In relation to cleaning and disinfection, examples of a lack of adequate knowledge by those persons with cleaning responsibilities were found within all risk categories (see Chapter 3, Figure 26). Within the A risk rated food businesses, almost half of those given cleaning responsibilities were unaware of the correct cleaning procedures to undertake. The absence of sanitisers / disinfectants within food businesses, combined with a lack of a suitable method to carry out effective cleaning / disinfection, was of

concern and was observed in all the risk rated categories. Over 30% of A risk rated food businesses exhibited this failing (see Chapter 3, Figure 27).

This research investigated the adequacy of food contact surfaces in relation to cross contamination risks, with particular emphasis on plastic food preparation / cutting boards, which were used in the majority of food businesses. The avoidance of cross contamination is dependent upon the correct use of food preparation surfaces. Within all risk rated categories were examples of inadequate separation of different food groups such as raw, cooked and ready-to-eat foods during the food preparation process. In the A risk rated food businesses 38% did not have separate food contact surfaces for raw and ready to eat foods (see Chapter 3, Figure 15).

The use of chopping / cutting boards for food preparation provides opportunities for cross contamination if the boards are not exclusively used for preparing the same food type, or if the same boards are used for raw and ready-to-eat food products without being effectively cleaned and disinfected between uses. In order to prevent cross contamination from the use of such food contact surfaces, separate designated boards should be used for raw and ready-to-eat foods or measures put in place to ensure the effective cleaning and disinfection of dual use boards. This research found evidence that within some food businesses, the same boards were being used for raw and ready-to-eat foods without adequate cleaning and disinfection. In the A risk rated category 39% of food businesses were using the same boards in the preparation of both raw and ready to eat foods without adequate cleaning and disinfection between uses (see Chapter 3, Figure 18).

#### **4.1.3 Pest control procedures within food premises**

Food pests can result in biological and physical contamination of food. Battersby (2010) believed that the presence of rodents was an indicator of a degraded environment. There were examples of pest activity in all risk rated categories. In A rated food businesses, nearly a quarter had evidence of inadequate pest control measures in place (see Chapter 3, Figure 28). The majority of businesses with inadequate pest control were nonetheless undertaking pest control treatments with appropriate records being retained for verification purposes. This calls into question

the efficacy of the treatments applied and also raises questions as to whether the FBOs / managers were critically evaluating the outcomes of the treatments.

#### **4.1.4 Personal hygiene of food handlers**

Although personal hygiene is not a difficult concept for food handlers to grasp, its effective management can be difficult. There is evidence that food handlers can be very resistant to changing poor personal hygiene habits (Engel *et al*, 2001). Inadequate personal hygiene by food handlers can result in cross contamination to food and food contact surfaces.

Of all bodily parts, the hands are the most likely to come into direct contact with food (Engel *et al*, 2001). Hands can also make direct contact with sources of contamination such as refuse, refuse receptacles, raw foods, contaminated body parts such as mouth, nose, body lesions and areas of the body associated with excretion of urine and faeces. Any such actions have the potential to contaminate hands and consequently any food or food contact surface that is handled or touched.

The presence and use of a wash hand basin with an appropriate hot and cold water supply, soap and hand drying facilities is an essential hygiene prerequisite for safe food handling. Examples of inadequate wash hand facilities were found within some food businesses of the study populations. In the A risk rated population 38 % of food businesses lacked this hygiene prerequisite (see Chapter 3, Figure 14).

Good hygienic practice requires that all food handlers regularly wash their hands. Research has shown that almost all food handlers know they should wash their hands after going to the toilet, but few do (Engel *et al*, 2001). Also without the basic components required for hand washing i.e. water at the correct temperature (45 – 50 Celsius), an adequate supply of soap and hygienic hand drying facilities, effective hand washing cannot take place. Therefore in addition to incorrect hand washing, unless all of these components were present during the inspection of the food premises, hand washing was not considered effective. Based on this definition, this research found examples of ineffective hand washing in all risk rated populations and that almost half

of the food businesses in the A risk rated population lacked effective hand washing facilities (see Chapter 3, Figure 30).

In order to prevent the transmission of foodborne disease within a food business, it is essential to exclude food handlers who are infected with pathogens that can be transmitted to and contaminate foods. The Food Standards Agency has produced guidelines for the control of food handlers diagnosed with a foodborne disease and for symptom-free food handlers who have been in contact with someone suffering from a foodborne illness. In essence, the guidelines recommend an exclusion from food handling activities that continues for a set period following the first negative stool sample being passed (Food Standards Agency, 2009). There were examples of inadequate arrangements for reporting the symptoms of foodborne disease and subsequent exclusion of food handlers in all risk rated categories. Within the A risk rated population inadequate reporting was found in nearly 38% of food businesses (see Chapter 3, Figure 21).

#### **4.1.5 Training and supervision of food handlers**

Under the provisions of the Food Safety (General Food Hygiene) Regulations 1995 and EC Regulation 852 / 2004, there were requirements for food handlers to be trained to a level commensurate with food safety risks. The majority of food handlers within all risk categories were in possession of a Level II food hygiene qualification. For all risk rated categories, at least 80% of FBOs / managers were in possession of a basic food hygiene qualification at Level II (Foundation Level). The number of FBOs / managers in possession of a Level III or IV (Intermediate or Advanced) qualification was significantly lower in all risk rated categories (see Chapter 3, Figure 6).

The observation that many food businesses were lacking one or more of the basic hygiene prerequisites even though the FBO/ manager was in possession of a food hygiene qualification calls into question the effectiveness of such training courses in promoting the hygiene prerequisites.

Another concern related to the ongoing supervision of food handlers. There were a significant number of food handlers who handled open foods, who were not in possession of the Level II food hygiene training qualification and were also not being effectively supervised by the FBOs / managers during food handling activities. Within the A risk rated businesses the level reached 39% of food handlers (see Chapter 3, Figure 8).

#### **4.1.6 A summary of the effects of the absence of the hygiene prerequisites**

The absence of the hygiene prerequisites discussed acted as constraints in Reg 4.(3) compliance at a pre-hazard analysis stage. There were examples of the absence of hygiene prerequisites in all risk rated categories.

It would be expected that all food businesses should have hygiene prerequisites in place as they were subject to food hygiene inspections by the food authority at regular intervals (see Chapter 2, Table 1). FBOs were regularly made aware of their legal obligations in accordance with the Food Safety Act Code of Practice. The FSO undertaking the programmed food hygiene inspection was required to discuss the findings of the inspection with the FBO / management representative. Legal contraventions were therefore verbally stated following the programmed food hygiene inspection and the findings, including specific references to relevant food safety legislation, were then confirmed in the form of a letter. The failure of a food business to implement the hygiene prerequisites was indicative of a lack of concern and /or a lack of will to commit the necessary resources to meet these requirements.

#### **4.2 The hazard analysis process**

This research found evidence of the complexity of the hazard analysis requirement in relation to the capacity of the FBOs / managers of the study populations to effectively implement this statutory obligation.

Hazard analysis consisted of five related and sequential components, which encompassed the process of identifying food safety hazards, the implementation and monitoring of appropriate control measures and a system review.

The hazard analysis process required the identification of microbiological, chemical and physical hazards present within a food business. This research found that FBOs / managers within the study populations identified microbiological hazards more readily than chemical and physical hazards (see Chapter 3, Figure 42). Yet physical hazards from sources such as packaging materials, food equipment and machinery, raw products, ingredients and jewellery worn by food handlers were present within the majority of food businesses. Chemical hazards were the least identified of all of the hazards. Such a low level of awareness was of concern as chemical contaminants such as phenolic substances and aldehyde compounds, which may be present in cleaning materials, are potentially dangerous. Substances such as iodine, fluoride and nitric acid are common components of disinfectants and can cause chemical poisoning in humans and can contaminate food if not handled correctly (Engel *et al*, 2001).

During its preparation food passes through several stages, from delivery of ingredients to final consumption. These stages can include delivery, storage, preparation, cooking, cooling, hot / cold holding and service. Food safety hazards can occur at all stages. At such points in the process, food can become contaminated with microbiological, chemical or physical contaminants. For example, most foodborne pathogens can divide and proliferate if food is held within the danger zone temperatures of between 5 and 63 Celsius. Such pathogens may survive a process designed to destroy them such as cooking, or the ineffective cleaning / disinfection of food equipment.

Only a minority of food businesses within the study populations had identified all of the points that were critical to food safety. The majority of food businesses had partially fulfilled this requirement (see Chapter 3, Figure 45). This research found variance in the advice provided in the recognized guidance documents. For example, in relation to safe cooking temperatures, the Chartered Institute of Environmental Health (CIEH) stated that controls should be as precise as possible and gave an example of a set temperature of 75 Celsius as a safe core temperature for cooked meat (CIEH, 1997). In contrast, the FSA's Safer Food Better Business advises that a safe

core temperature is achieved when clear juices are observed flowing out of the cooked meat. In the former case an objective control is recommended whereas the latter employs a subjective control.

Only a minority of food businesses within the study populations had implemented effective controls and monitoring procedures at all critical points. The majority of food businesses had partially fulfilled this requirement (see Chapter 3, Figure 47).

In terms of undertaking the final stage of the hazard analysis process i.e. review, compliance was extremely low. This research noted an unusual trend within the study populations. There was a total absence of the review process in both the highest and lowest risk rated food businesses – the A and C food businesses respectively. Compliance was found only in a minority of food businesses within the B risk rated category (see Chapter 3, Figure 49).

As a consequence of the above, full compliance with the hazard analysis requirement was found in only a small minority of food businesses within the study populations. The highest level of compliance was found in the B risk rated food businesses, but still only 7% of these businesses were compliant (see Chapter 3, Figure 51).

The probable reason for the somewhat higher level of compliance within the B risk rated food businesses was due to the inclusion within this group of butchers handling both raw meats and ready to eat foods. Such food businesses required a licence to operate until 2004, when the applicable legislation was revoked. One of the licensing conditions was the requirement to operate a fully documented HACCP system that was regularly reviewed.

The failure of FBOs to effectively implement a review was a combination of two components. The first was ignorance amongst FBOs / managers of the need for such a review. Between 8% and 26% of interviewees provided a “Don’t Know” response to this question (see Chapter 3, Table 49). Secondly, where there was an awareness of the need for review, there was a widespread misunderstanding of what was meant by a review (see Chapter 3, Figure 50).

This research found a generally poor level of awareness amongst FBOs / managers of the term “hazard analysis,” with a significant number being unaware of the term (see Chapter 3, Figure 57). An implication of this finding was that the sources of food hygiene information used by FBOs / managers were ineffective at promoting HACCP based systems to the regulated stakeholders – the FBOs.

After being provided with a simple definition of hazard analysis, it was found that 77% and 81% respectively of FBOs /managers of B and C risk rated food businesses were aware of their legal obligation to comply with the regulatory requirement. Of greater concern was the low level of awareness within the A risk rated population, where only 29 % FBOs /managers were aware of this regulatory obligation (see Chapter 3, Figure 59). However, only a small proportion of these were fully compliant. The low level of full compliance in all risk categories implied that those FBOs who were non-compliant either knowingly chose not to comply or lacked the motivation or capacity to comply with the regulatory obligation (see Chapter 3, Figure 51).

#### **4.3 The constraints hindering the implementation of hazard analysis within the non-compliant food businesses of the study populations**

As part of this research, primary data was obtained from the interviews with FBOs / managers which identified specific constraints that hindered the implementation of hazard analysis within food businesses of the study populations. The table below shows the relative importance of the constraints identified; these are discussed below in the order of their significance, expressed as weighted averages.

A summary of the constraints and their hierarchical order expressed as weighted averages is shown in Table 5.

<i>Constraint</i>	<b>A %</b>	<b>B %</b>	<b>C %</b>	<b>Weighted Average</b>	<b>Ranking</b>
Lack of practical guidance	50	81	72	73	1
Terminology	31	77	72	71	2
Lack of information	44	75	70	70	3
Lack of training resources	22	66	59	59	4
Lack of knowledge	47	50	41	44	5
Time	28	29	29	29	6
Staff Turnover	19	20	16	18	7
Finance	13	14	20	17	8=
Other Priorities	16	15	18	17	8=
Inadequate Assistance from FSOs	25	13	11	13	10
Waste of Time	3	6	5	6	11
Others	0	3	3	2	12

Table 5. Hierarchical order of the constraints identified

#### **4.3.1 Constraint 1. Lack of practical guidance regarding hazard analysis / HACCP**

The lack of practical guidance, defined in this research as the absence of assistance, instruction and direction in the implementation hazard analysis / HACCP based systems, was the most commonly identified constraint, being identified by in excess of 50% of FBOs / managers in all risk categories (see Chapter 3, Figure 67) and by 73% in total.

#### **4.3.2 Constraint 2. Terminology**

Terms commonly occurring in Reg4.(3), such as hazard, control point, CCP, monitoring and review, were little understood by FBOs / managers. There were examples of FBOs / managers in all risk categories who were confused and had little idea of the terminology associated with Reg 4.(3). This was markedly more prevalent among FBOs / managers of the B and C risk rated businesses, although 63% of FBOs / managers in the A risk rated category provided a “Don’t Know” response to this question. Such a poor level of understanding was probably due to such terms not being common parlance within the food businesses of the study populations (see Chapter 3, Figure 63).

#### **4.3.3 Constraint 3. Lack of useful information regarding hazard analysis / HACCP**

A general assumption was that adequate information had been provided by the Food Standards Agency and the LBC which, as the food authority, both enforced the requirement and provided relevant information and advice to food businesses. The findings of this research found this assumption to be flawed, with only 12% to 19% of food businesses using the FSA and 12% to 14% using the LBC as a source of such information (see Chapter 3, Figure 62).

The findings relating to sources of food safety information available to FBOs / managers demonstrated that the potential of both the FSA and LBC to provide helpful information had not been effectively harnessed in relation to the implementation of HACCP based systems.

#### **4.3.4 Constraint 4. Obtaining hazard analysis / HACCP training**

Between 22% and 59% of FBOs / managers within the risk categories identified the difficulty of locating an appropriate hazard analysis training resource as a constraint. Although it was identified as a constraint by only 22% of A risk rated food businesses, a further 44% provided a “Don’t Know” response (see Chapter 3, Figure 65).

The introduction of EC Regulation 852/2004, Article 5, which required appropriate documentation relating to the HACCP based system, increased the demands on FBO/ managers. This resulted in a greater need for training resources to be developed and made available to these stakeholders. However, it may be concluded that at the time this study was carried out, this need had yet to be adequately met.

#### **4.3.5 Constraint 5. Inadequate knowledge and technical expertise regarding hazard analysis / HACCP based systems**

Primary data obtained from this research has shown a general lack of knowledge in over 40% of food businesses in all risk rated categories (see Chapter 3, Figure 68). As discussed above, neither the FSA nor the local authority were considered by FBOs / managers as significant resources in developing the expertise to implement the hazard analysis requirement. This concurs with a WHO finding that there would be reduced compliance with these requirements in the absence of external technical support (WHO, 1999).

#### **4.3.6 Constraint 6. Time taken to implement a hazard analysis / HACCP based system**

Over a quarter of FBOs within the study populations found that the time required to implement a hazard analysis / HACCP based system was a constraint (see Chapter 3, Figure 73). Operating within a heavily regulated environment, the FBOs had numerous regulatory obligations placed upon them. This resulted in limited amounts of time being available to meet the essential demands placed upon the business e.g. dealing with VAT, business rates, planning issues, personnel and employment matters. The time constraint was further compounded by the nature of SME food businesses where FBOs / managers were often involved personally in the food production process and front of house duties. Therefore the time available for the implementation of a hazard analysis / HACCP based system was reduced by these competing demands.

#### **4.3.7 Constraint 7. Staff Turnover**

A common assumption of high levels of staff turnover in SME food businesses was not confirmed by the research findings, with less than a quarter of FBOs / managers in the study populations stating this to be a problem (see Chapter 3, Figure 70). In the majority of cases family members owned the businesses, including those that operated as plc companies. It was common practice within such establishments for family members to be employed within the business. Further, food handlers employed by food

businesses that formed part of national chains operating as single franchises usually had better terms and conditions of employment than their counterparts employed in sole trader enterprises and therefore tended to remain in employment.

Thus within the food businesses studied, the higher retention periods of staff meant that information, instruction and training in HACCP based systems, had the potential to be retained within an organization for longer time periods than previously expected. As a consequence staff turnover was not a major constraint in hazard analysis implementation within the study populations.

#### **4.3.8 Constraint 8 =. Finance**

Finance, although suggested as a possible constraint in the implementation of HACCP based systems, was identified by 20% or fewer of FBOs / managers. This finding indicated that there existed the ability amongst the majority of FBOs to allocate additional finances if they perceived a definite business advantage in the implementation of a HACCP based system (see Chapter 3, Figure 64). However, this reasoning is qualified by FBOs generally having little awareness of the actual financial costs of implementing such a system.

This research indicates that there were generally few perceived economic incentives to motivate FBOs to self-regulate the assessment and control of food safety hazards. It is not logical for an organisation to expend resources in order to achieve regulatory compliance when the cost of compliance is greater than the perceived benefits (Langbein and Kerwin, 1985). With specific reference to Reg 4.(3), Ryan (2001) stated that Reg 4.(3) is considered as something to which there are no likely benefits attached. It therefore had not been readily embraced by SLDBs. The lack of perceived economic incentives was a greater constraint than lack of finance in the implementation of Reg 4.(3).

#### **4.3.9 Constraint 8=. More pressing business priorities**

SMEs are a heavily regulated sector (Better Regulation Taskforce, 2000). As stakeholders in a business operating within such an environment, FBOs need to achieve regulatory compliance with a wide range of legislation, each imposing its own regulatory burdens. In this research the majority of FBOs / managers did not state this to be a constraint; however, a significant proportion provided a “Don’t Know” response (see Chapter 3, Figure 69).

This finding was surprising as it has been claimed that businesses are overwhelmed with the increased volume and complexity of legislation. Such businesses have complained about the time and cost involved in complying with the growth of regulation (Better Regulation Taskforce, 2000).

A major reason for non-compliance with regulatory requirements was that businesses were unable to establish what was required of them. This increased the risk of selective compliance with regulatory obligations, and the overall burden of regulation distracted FBOs from more productive activities, thereby inhibiting growth (Better Regulation Task Force, 2000).

Hampton was particularly concerned at the extent to which the burden of regulation was felt disproportionately by smaller businesses (Hampton, 2005). Businesses expressed concern regarding the cumulative burden of regulation, especially the requirement to complete forms (Hampton, 2005); this is a feature particularly associated with HACCP based systems.

It is clear from this research that Reg4.(3) was part of the burden of assimilating and complying with legislation that was generally beyond the capacity of FBOs to implement. This was reflected by the ignorance and subsequent failure of FBO/ managers to identify the actual burden of such legislation as a significant constraint.

#### **4.3.10 Constraint 10. Inadequate assistance from Food Safety Enforcement Officers**

A quarter of FBOs / managers in A risk rated food businesses stated that they received inadequate assistance in the implementation of hazard analysis / HACCP based systems from FSOs (see Chapter 3, Figure 72). The higher the risk rating assigned to a food business, the greater the likelihood that enforcement action had been taken by FSOs in the pursuance of minimum legal compliance. The resultant effect may have produced a degree of ill feeling on the part of the FBO / manager towards the FSO and a perception that adequate assistance was not provided in the implementation of any HACCP based safety system. Therefore inadequate assistance from FSOs, either real or perceived, was a constraint, particularly within the highest risk rated food businesses.

#### **4.3.11 Constraint 11. Feelings that hazard analysis was a waste of time**

Only a small percentage of FBO / managers stated that hazard analysis / HACCP was a waste of time. This finding was qualified by the high percentage of FBOs who provided a “Don’t Know” response (see Chapter 3, Figure 71).

#### **4.3.12 Other constraints**

During the interviews FBOs / managers were given the opportunity to identify any additional constraints that were relevant to the implementation of HACCP based systems. Other constraints were not identified in any A risk rated food businesses and at very low levels in B and C risk rated food businesses. Therefore such constraints were not pursued further in this research (see Appendix 76).

All the above constraints were identified and considered individually. However several constraints, namely the lack of practical guidance, information and technical expertise, can be linked by a common thread of resource deficiency. Such resources could be obtained by FBOs if they were willing and able to provide the necessary finances to address these issues. It can therefore be argued that these constraints, although presented individually, are interrelated by a financial element.

#### **4.4 Validity of Hypothesis 1**

The primary data obtained by the researcher from both the interviews with FBOs / managers and the inspections of their food businesses confirmed the first component of the hypothesis – that “*constraints exist making the various components of Reg 4.(3) too complex for the FBO to effectively implement*” to be valid.

Within the study populations there was a low level of compliance with the hazard analysis /HACCP based system requirement, with full compliance being noted only in 7% of B risk rated category food businesses (see Chapter 3, Figure 51).

Non-compliance amongst the FBOs was a composite of 3 components:

1. The degree to which the FBOs knew and comprehended the Reg 4.(3) requirement.
2. The degree to which the FBOs were willing to comply with the requirement.
3. The degree to which the FBOs were able to comply with the requirement.

##### **4.4.1 The intellectual capacity of FBOs / managers**

It is argued that without extensive resources the paradigm in existence at the time of the research would remain unchanged. FBOs, either through ignorance or deliberate choice, exhibited a general reluctance or unwillingness to implement the hazard analysis requirement or similar HACCP based systems.

There have been concerns expressed regarding the intellectual capacity of FBOs / managers in relation to the implementation of hazard analysis and other HACCP based systems. Rukeza (2002) stated that such systems are dynamic processes not easily transferable to small businesses, with their requirement for a basic knowledge of microbiology and hygiene together with the use of new terminology that means very little to SLDBs. She further stated that small businesses lacked the competence to

implement HACCP based systems successfully. Engel believed that the HACCP concept was not effectively implemented in food businesses as the concept was theoretically elaborate and abstract and may not therefore be put into practice (Engel, 2001).

#### **4.4.2 The shifting legislative paradigm**

The legislative requirements for hygiene prerequisites prior to the Food Safety (General Food Hygiene) Regulations 1995 and EC 825/2004 were prescriptive in nature and typical of food safety legislation up to that time. The simplicity of the requirements made them relatively easy for FBOs to interpret and implement. FBOs were therefore able to judge the level of their own compliance. This was due to the measures required by the food authority, which were related to areas such as the structure of premises, the cleanliness of equipment, and temperature control, being relatively easy for FBOs to comprehend. The resultant negotiations between the enforcer and the enforcer were restricted to the objective verification of simple parameters in order to determine outcomes, on which both parties agreed. When a FBO undertook the necessary prescriptive remedial requirements, a dependency relationship developed in which the enforcing officer was generally perceived by the FBO as a source of information and assistance in the achievement of regulatory compliance.

Under a regime of prescriptive legislation, the FBO perceived compliance as carrying out the negotiated requirements of the enforcer following the regulatory encounter. The FBOs in such businesses developed a mind-set that their businesses were compliant once they had carried out remedial measures relating to the prescriptive requirements, based on the findings of a programmed food hygiene inspection at a fixed point in time.

A constraint hindering the hazard analysis process was the evolving and changing nature of food safety legislation, which led to the hazard analysis requirement. Regulation 4.(3) was a legal requirement made under the (now revoked) provisions of the Food Safety (General Food Hygiene) Regulations 1995. Prior to 1995, regulations

were of the command and control type in which the regulator defined the rules and acceptable procedures and the food authorities were charged with implementing the legislative requirements (Fairman, 1999).

Command and control legislation has been criticised in relation to its implementation. Critics claim that it stifles motivation, is difficult and costly to enforce and is inefficient (Aalders and Wilthagen, 1997). It also has its proponents who believe that it affords clarity, certainty and predictability, which provide a basis for the regulated actors to know what is required and whether it can be achieved (OECD, 1994).

A concern relating to enforcement prior to 1995 was that the advice given to FBOs during food hygiene inspections was the result of the conditions found at that specific date and time. This represented only a “snap shot” of the food business at that particular point in time. The resultant advice and requirements would therefore have addressed existing deficiencies but would have provided little assistance with regard to the proactive monitoring and review components of the hazard analysis requirement.

This finding was endorsed by Fairman (2004), who found that SMEs had very little knowledge of food safety legal requirements and that they relied on the inspector to interpret and apply the law within their company and specify a mechanism by which the SME could achieve legal compliance. Such a relationship allowed FBOs to assume compliance with regulatory requirements once remedial measures of the prescriptive requirements specified by the FSO were completed. Fairman’s research found that the majority of SMEs believed compliance meant doing everything they were told to do by the FSO at the last food hygiene inspection. Fairman (2004) believed that in the mind of the FBO, compliance was the object of the inspection and was bargained out at that point in time.

The emergence of Reg 4.(3) in 1995 was a distinct departure from the previous command and control prescriptive legislation and required all FBOs to adopt proactive compliance strategies to deal with the concept of enforced self-regulation. Braithwaite (1982) defined enforced self-regulation as “where the regulator imposes a requirement on businesses to determine and implement their own internal rules and procedures to fulfil the regulator’s policy objectives.”

A consequence of the shift towards enforced self-regulation there was a change in the approach to enforcement and thus in the relationship between the enforced and the enforcer. This change would be perceived by FBOs as making it more difficult to comply with legislative requirements. Research by Fairburn and Yapp (2004) found that small businesses often externalise the monitoring and evaluation components of compliance, relying on information provided by enforcing authority officers. The implementation of hazard analysis required the FBO to take greater responsibility for the management of food safety, with less reliance on the FSO.

The previous reliance on an FSO to identify areas of non-compliance, combined with the belief by some FBOs that it was the responsibility of the FSO to inform, advise, direct and monitor regulatory compliance, hindered the implementation of Reg 4.(3).

#### **4.4.3 The comprehension of hazard analysis**

This research found that within the food businesses of the study populations, the knowledge of food safety hazards and their control was often inadequate. This resulted in appropriate control measures often not being fully implemented. Fairman found that many food businesses, especially smaller ones, had inadequate knowledge of the food safety hazards associated with their businesses and had inadequate resources to engage the services of food safety specialists (Fairman, 2004). Fairman's research discovered a worrying response by FBOs in respect of legislation that they did not understand – the majority ignored it (Fairman, 2004).

#### **4.4.4 Compliance, willingness and capacity of FBOs**

The need to comply with the hazard analysis requirement was met with a general unwillingness and / or incapacity amongst FBOs of the study populations. This was reflected in both the failure to allocate the necessary resources, the provision and maintenance of the hygiene prerequisites, and the low level of compliance with the requirement. Innovative strategies for encouraging compliance are unlikely to be effective if organisations have no capacity or expertise in how to comply with a regulation (OECD, 2000). Further, regulated actors lose confidence in regulations if

they are required to comply with technical rules that do not appear to relate to any substantive purpose. In relation to compliance, Baron and Baron (1980) stated that businesses would comply with a regulation provided that the perceived marginal benefit of compliance is equal to or exceeds the perceived marginal cost of compliance.

In 2001, a study commissioned by the Food Standards Agency investigated the main barriers that hindered compliance with food safety requirements. In summary, the main barriers with specific reference to hazard analysis were:

1. a lack of understanding of food safety principles;
  2. inconsistent enforcement by food authorities;
  3. a lack of knowledge by the FBO in the identification of food safety hazards;
  4. difficulties in keeping up to date with current food safety legislation;
  5. limited availability of specialist consultancy intermediaries
- (Food Standards Agency, 2001).

The above findings 1, 3, 4 and 5 were in accord with the findings of this research.

#### **4.4.5 Self-regulation and the hazard analysis requirement**

This research has shown that enforced self-regulation requirements for hazard analysis were difficult for FBOs to understand. It used terminology that was often alien to them and required a management systems approach that was often not within the capacity of the majority of FBOs to implement. This view was endorsed by Pennington who acknowledged that there was confusion about the application of HACCP in both a practical and legislative sense and “HACCP”, “HACCP principles”, “hazard analysis” and “risk assessment” were terms that seemed to be used interchangeably and could be misinterpreted (Pennington, 2009).

In order for self-regulation to be effective, two components are required – the willingness to act and the capacity to do so (Dawson *et al*, 1988). If either of these components is missing the viability of enforced self-regulation is impeded.

In order to address capacity issues, a FBO may wish to employ the services of a food hygiene consultant to assist in the implementation of the hazard analysis requirement. However, the engagement of a food hygiene consultant requires expenditure of resources in terms of time and money. Small food businesses often do not have access to resources other than those of the food authority. They cannot afford to buy in consultants, nor belong to trade associations that could assist them in achieving compliance and are unable to manage risks without external assistance (Hutter, 2011). Where resources are scarce, in order to provide the necessary motivation, a food hygiene consultant would need to provide the FBO with clear evidence of the benefits of Reg 4.(3) compliance. In food businesses where there are inadequate resources, even where the motivation to self-regulate is present, the capacity to do so may be inadequate to implement an effective hazard analysis system. Where such specialist support is absent, the motivation and capacity of the FBO becomes pivotal in the self-regulation process.

Dawson *et al* (1988) investigated self-regulation in relation to health and safety at work and found that self-regulation within SME businesses was variable. Applying similar reasoning to self-regulation in terms of the hazard analysis requirement, a parallel exists with the capacity of a FBO to comply with the hazard analysis.

#### **4.4.6 Resources required for hazard analysis**

The second component of hypothesis 1 was that *“hazard analysis was too complex for FBOs of SMEs to effectively implement in the absence of extensive or disproportionate resources.”*

During the research period, despite an extensive literature search, a general paucity of information was found in relation to the implementation of HACCP based systems for whole populations of FBOs where free extensive resources and assistance were provided,

One relevant study was undertaken by Clayton *et al* in their report “An Evaluation of the Butchers' Licensing Initiative in England” undertaken in 2003. The introduction of the Food Safety (General Food Hygiene) (Butchers Shops) Amendment Regulations 2000 [2000 No 930] made it a legal requirement for all relevant butchers to have been

licensed by 1<sup>st</sup> November 2000. In order to assist butchers in meeting the licensing requirements free consultancy was provided. The purpose of this support was to reduce the time for compliance with the licensing requirements and to ensure butchers had the necessary hygiene prerequisites in place for HACCP implementation.

Clayton *et al* (2003) found that 63% of respondents believed it would not have been possible to implement a HACCP system without the free consultancy. Moreover, 72% of respondents stated that the food hygiene consultant helped them implement a HACCP system (Clayton *et al*, 2003).

The findings of the research of Clayton *et al*, although restricted in scope in terms of the number of respondents and the type of food business involved, provide a useful insight into the implementation of HACCP based systems in other types of food business.

These findings, together with the low level of compliance with the hazard analysis requirement found in this research, suggest that extensive guidance and support in the implementation of HACCP based systems would assist FBOs to implement such systems. However, the cost of such support is likely to be beyond the resources available to most businesses.

Research undertaken by Hutter (2012) found that small businesses often did not have adequate resources available to them. They were unable to buy in consultancy and could not afford to join business associations, hence the likelihood of their being able to implement a HACCP based system would be much reduced.

In summary, this research has found that both components of Hypothesis 1 are valid i.e. that there are a number of constraints which hinder the implementation of Reg4.(3) and, moreover, that small businesses do not have available to them the resources required to overcome the constraints.

## 4.5 Validity of Hypothesis 2

This research found the second hypothesis “*that, where applied, hazard analysis is implemented with varying levels of success by the FBOs of SMEs, the purpose is avoidance of legal action rather than a procedure to control food safety risks*” to be invalid.

During the interviews which formed part of this research, FBO/ managers were asked to indicate their main reason for attempting to comply with the hazard analysis requirement; four options were available: -

1. avoidance of enforcement action;
2. as a method of producing safe food;
3. to both avoid enforcement action and to produce safe food;
4. any other reason.

The avoidance of enforcement action as the primary purpose for hazard analysis compliance was a minority response of FBOs/ managers. Only 12% of the FBO/managers of A risk rated food businesses provided this response, and amongst the B and C rated businesses the proportions were lower still (see Chapter 3, Figure 74). The somewhat higher response rate among the A rated businesses may be due to their being subject to more frequent inspections than the B and C rated businesses. Overall, the avoidance of enforcement action by the food authority was not a major motivator in attempts to comply with the hazard analysis requirement.

Between 18% and 28% of FBOs / managers stated that the primary purpose of implementing hazard analysis was to produce safe food (see Chapter 3, Figure 75). The production of safe food was therefore not the main motivator for FBOs implementing a HACCP based system. The low level of positive responses was an indicator of the perception of the practical usefulness of hazard analysis / HACCP based systems.

Between 21% and 49% of FBOs / managers within the study populations stated that the primary purpose of implementing hazard analysis was a composite of the

avoidance of enforcement action legal action and the production of safe food, rather than these factors in isolation (see Chapter 3, Figure 76). This may be due to a realisation that the failure to produce safe food could lead to a loss of business and possible enforcement action.

#### **4.6 Validity of Hypothesis 3**

The final hypotheses was *“that a regulatory model based on cooperation between the enforcing authority and the FBO utilising simple guidelines is more effective than a punitive approach for the successful implementation of HACCP based food safety management systems.”*

During the research period the Food Safety (General Food Hygiene) Regulations 1995 which contained the Reg 4.(3) requirement were revoked. Following their revocation, Article 5 of EC Regulation 854/2004 placed a more stringent requirement on FBOs. In order to comply with Article 5, FBOs were required to implement a documented HACCP based system within their food business.

The hazard analysis requirement, as set out in Reg4.(3), was removed from legislature after a relatively short duration. This prevented the researcher specifically investigating the efficacy of formal enforcement action in ensuring compliance with the requirement in the food businesses of the study populations. During the period between its inception in 1995 and its revocation in 2004, only 16 Enforcement Notices were served by the LBC for failure to comply with Reg 4.(3) of the Food Safety (General Food Hygiene) Regulations 1995. In all these cases the issue of the notices resulted in partial, but not full compliance with Reg 4.(3). Prosecution action in relation to non-compliance was not instigated, as it was not considered to be in the public interest to pursue the matters through the courts. The data extracted from such a limited amount of enforcement did not allow for a cogent analysis of the effect of formal enforcement.

It was therefore decided that an alternative approach to investigating the validity of this hypothesis should be devised. This was the Intervention Project, the details of which are provided in Chapter 2, 2.15. The project was undertaken between February

and August 2006; the results are presented in Chapter 3, Section 3.21. Owing to changes in the profile of food businesses registered by the LBC between the periods of the principal investigation and the Intervention Project, it was not possible to ensure that all the businesses which participated in the former were available to participate in the latter. However, it is argued that the numbers of businesses involved in both were such that they were broadly representative of the total populations and that comparisons between the findings before and after the Intervention Project would allow reasonable conclusions to be drawn.

Consideration of the results of the Intervention Project in relation to the LACOTS criteria for safety (see Chapter 2, 2.14), suggests that the proportion of businesses designated as safe increased from 5% to 33%, a significant improvement but nonetheless still a minority. This is because a business needed to have both carried out an analysis of hazards and implemented appropriate controls at critical points in order to be considered as safe. It is argued here, however, that where a FBO implements effective controls in the absence of a formal analysis, the outcome in relation to food safety is “safe.” Implementation is the process whereby the FBO makes changes to achieve food safety and modifies those changes in response to the self-monitoring – in essence the implementation of controls, monitoring and corrective actions at critical points.

The basis of this reasoning is that generic controls, monitoring and corrective actions can be implemented in a prescriptive manner, as FBOs have had a long history of undertaking prescriptive requirements in order to meet their regulatory obligations. By implementing prescriptive generic controls, monitoring and corrective actions, the analysis requirement fulfils a subordinate role in terms of ensuring food safety.

The practical requirements of the control of CCPs, such as the prevention of cross contamination, cooking, hot and cold holding of high risk foods, can be implemented in a parallel manner to the hygiene prerequisites. Food handlers could be trained to focus on and implement prescriptive controls in order to eliminate or reduce food safety hazards to an acceptable level. By focusing solely on measureable outcomes the importance of the analysis component is significantly diminished.

When businesses which lack a formal analysis of hazards but which have implemented and maintained appropriate controls at critical points are designated as safe, it can be seen that the Intervention Project resulted in the proportion of businesses being considered as safe increasing from 48% to 85%.

This conclusion is supported by the evidence derived from the inspections carried out subsequent to participation in the Intervention Project. In almost 90% of participating businesses lower risk scores were achieved, resulting in many businesses being assigned to a lower risk category (Chapter 3, 3.21.1). These findings support the validity of Hypothesis 3.

It must be stressed that the populations of A and B risk rated businesses from which the samples for the principal investigation and the Intervention Project were drawn were not identical. However, the very clear improvements in standards observed in businesses after the Intervention Project suggests that the benefits derived were real and indicative of the potential for improvements among a wider population.

The evidence suggests that the FBOs were more motivated to implement a HACCP based system when three conditions were applied. The first of these was that FBOs/managers should be coached by a FSO in a non-enforcement role. The second was the use of easily understood generic prescriptive control measures. The third condition was that FBOs were clearly informed of the potential consequences of non-compliance with their regulatory obligations. It would be expected that the wider adoption of a similar approach would result in a higher level of compliance among food businesses in the LBC and a concomitant improvement in food safety standards.

The Intervention Project showed that food businesses, when provided with appropriate support, can be encouraged to comply with the hazard analysis / HACCP based system requirement and thereby improve food safety. The process through which a food business reaches a decision to attempt to comply with the legislative requirements has been studied by Heasman and Henson (1998). They constructed a generic model of the compliance process which identified the compliance stages and considered the factors influencing the outcome of each stage. The result of the Intervention Project permitted an enhanced and more specific model to be constructed, showing the points where

inputs could assist the FBO / manager to achieve compliance with the hazard analysis requirement. This enhanced model is shown below (Figure 1):

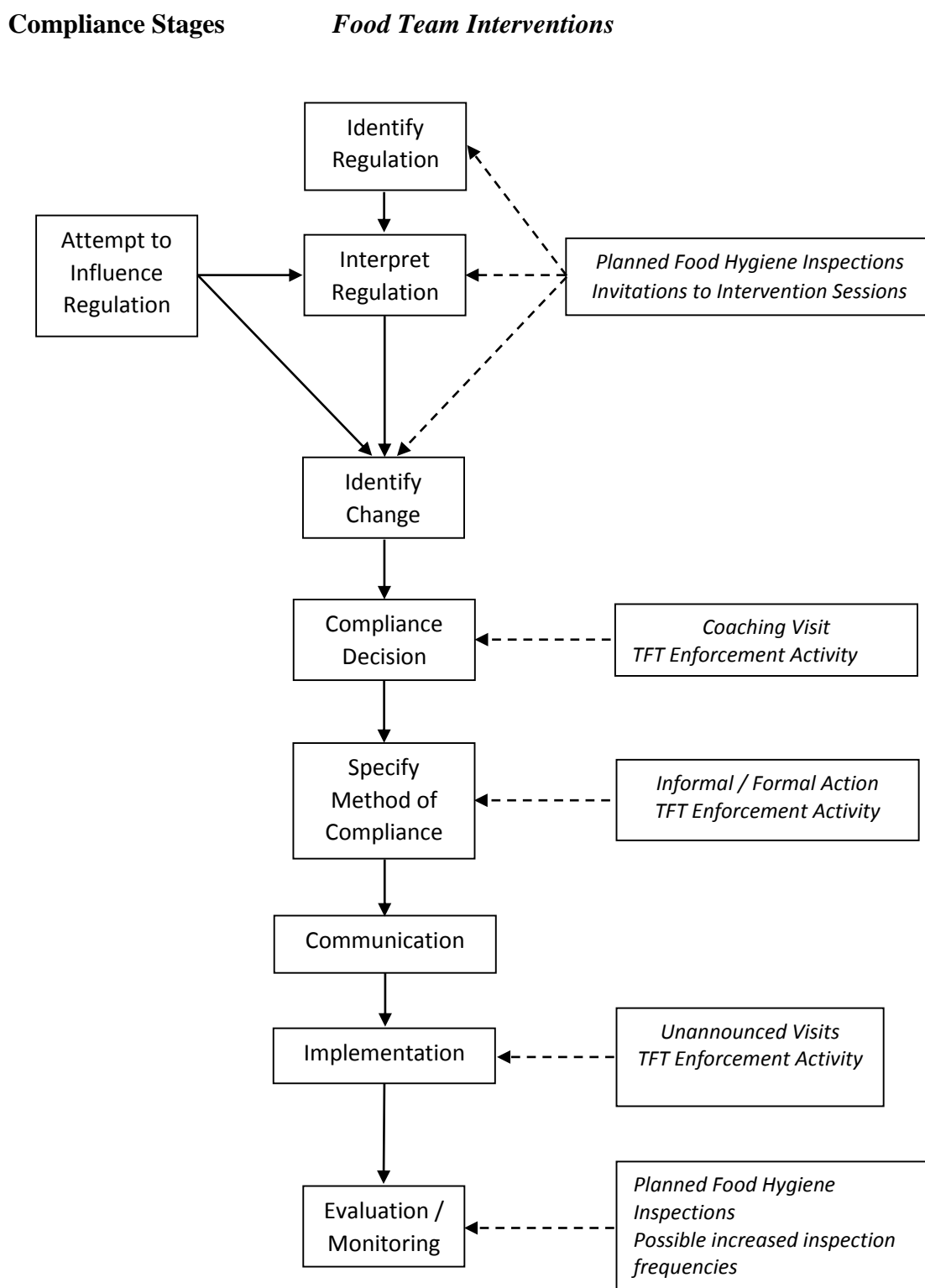


Figure 1. Compliance process model with Food Team interventions (based on Heasman and Henson, 1998)

#### **4.6.1 Approaches to enforcement**

While this research has shown that compliance with the hazard analysis requirement is more likely to be achieved through encouraging and supporting food businesses, it is still the case that other forms of action can be adopted to promote compliance with food safety requirements. Such action may include the provision of information to the public about food hygiene standards of food businesses or taking enforcement action. The latter may be informal e.g. requiring a business to effect improvements without the direct threat of sanctions, or formal, as in the issuing of Enforcement Notices or, as a last resort, prosecution in the criminal courts.

An example of the provision of information to the public aimed at improving food safety is the Food Hygiene Rating Scheme (FHRS). As a motivator towards improved food hygiene standards, FHRSs had been operating for many years in cities throughout the world before their introduction in the UK and has proved popular with the public (Stefanovic and Woollard, 2011).

The FHRS is a development of a previous scheme known as Scores on the Doors (see Chapter 1. 1.6). The ratings provided under the FHRS relate to the level of compliance with food hygiene and safety requirements, structural conditions and the confidence in management. Each element is scored using guidance provided in the Food Safety Act Code of Practice 2012 and the Food Standards Agency Brand Standard 2012. Once the food hygiene rating is assigned to a food business, numbers with simple descriptors are used to illustrate the score. These range from 0 (Urgent Improvement Necessary) to 5 (Very Good). Unlike similar schemes used in other countries, the display of certificates in food establishments, although encouraged by food authorities, is not mandatory in England.

This scheme has been considered to be a tool of consumer empowerment. Hatchett (2013) has suggested that providing consumers with this information exerts a pull effect that enhances business compliance just as much as the push effect of enforcement.

With regard to enforcement action, there is a long history of disagreement amongst enforcement agencies relating to the optimum strategies for achieving compliance with regulatory obligations. The spectrum of strategies ranges between those agencies that believe that legal compliance can only be achieved by the implementation of tough sanctions and those that believe a milder approach would better achieve compliance. There is cogent reasoning both for and against such models (Ayers and Braithwaite, 1992).

#### **4.6.2 Models of enforcement**

Scholz (1984) promoted a strategy called Tit for Tat (TFT) as a model most likely to create a beneficial cooperation between the enforcer and the enforced. This strategy only requires an enforcing authority to implement a deterrent response when an organisation exploits the cooperative stance of the enforcer. The regulator refrains from using deterrent sanctions, keeping them in the background and allowing moral persuasion to form the forefront of the strategy. Thus using the TFT strategy, the enforcer allows cooperation to form part of the initial stages of regulatory encounters. The TFT strategy is not based on the assumption that people are naturally cooperative in their business dealings, rather that cooperation is a preferable option for both parties until the business deviates from its regulatory obligations. A fundamental implication of the Ayres and Braithwaite approach is that regulators maintain an image of invincibility in the background and should only use punishment in regulatory encounters where persuasion is not successful (Ayers and Braithwaite, 1992).

The optimum strategy for a regulator to construct and implement is that of a Benign Big Gun (Ayers and Braithwaite, 1992). The Benign Big Gun is not dependent upon the regulated being virtuous. When a regulated organisation is not virtuous, the guns are placed in a state of readiness prior to firing. They are not fired at the virtuous, as they occupy a background position, hence virtue is nurtured. It allows regulators to “*speak softly while carrying very big sticks*” (Ayers and Braithwaite, 1992). As a tool for the promotion of motivation, the Benign Big Gun provides a solution to non-compliance irrespective of the reasons for non-compliance and enforced self-

regulation is effective when embedded within a matrix of escalating interventions (Ayers and Braithwaite, 1992).

For mandatory compliance to be effective, the perception of fairness by the enforced in relation to the actions of the enforcer is important. By fostering cooperation until non-compliance occurs, the negative effects of mistrust do not impinge on responsible FBOs. Appropriate punitive action by the enforcer ensures that FBOs who engage in non-compliance for monetary reasons are encouraged to favour compliance over non-compliance. The TFT strategy allows the regulator to forgive once compliance is again established. The process of forgiveness on the part of the enforcer provides motivation for the enforced to continue to comply with their regulatory requirements.

This facet of compliance is particularly important in situations where partial compliance is commonplace, as was the case with the hazard analysis requirement in many businesses in all risk categories (see Chapter 3, Figures 42 to 50). By cultivating expectations of responsibility, the regulator can coax and caress fidelity towards the spirit of the law (Ayers and Braithwaite, 1992).

Within the high-risk food businesses of the study populations, the level of compliance with the hazard analysis requirement was low. The use of the TFT strategy would be the preferred approach for these food businesses in facilitating compliance. It would allow the LBC, as the enforcing authority, to use minimum compliance as a foundation for improvement for those FBOs who feel a sense of responsibility to achieve compliance. It further would allow the LBC as the regulator to define the essential requirements of compliance and harness the sense of responsibility of the FBO as a catalyst in the achievement of regulatory compliance. Where a FBO strives to achieve legal compliance until a financial constraint is encountered, it is likely that persuasion will receive a positive response and the subsequent level of compliance will improve. In situations where the current level of compliance does not meet the minimum legal standards, the TFT strategy allows the regulator to resort to proportional punitive measures to achieve compliance.

The TFT strategy is also suited to FBOs who operate between the two extremes of social responsibility and maximising profits. Such FBOs will act as socially

responsible until a threshold is reached, beyond which the FBO exhibits a behaviour that is totally motivated by financial considerations.

The TFT strategy can be utilised during regulatory encounters with FBOs, as most businesses operate within a matrix of discrepant obligations of standards of economic rationality, law abidingness and business responsibility. The flexibility inherent in the TFT strategy has the potential to respond to these different elements. When such FBOs are involved in a regulatory encounter they tend to exhibit to the regulator what they believe to be the best of their multiple self i.e. an interface that the FBOs will perceive to be well received by the regulator (Ayers and Braithwaite, 1992). In terms of regulatory compliance with the hazard analysis requirement, actions by the regulator may affect the compliance outcome. Therefore both the regulator and the regulated obtain a dual benefit from this mutually advantageous stance.

At the conclusion of the regulatory encounter the self-centred side of the regulated FBO may increase in dominance. Such dominance will be tempered by the threat of the TFT punitive measures that may be implemented by the regulator to steer the regulated FBO towards compliance. Therefore in regulatory encounters, where FSOs implement a cooperative stance with the regulated FBOs, this will allow the regulated actors to put their cooperative self forward.

The relationship between the regulator and the regulated i.e. the LBC and FBO, can be illustrated in the form of an enforcement pyramid (see Figure 2). The enforcement pyramid describes a hierarchy of enforcement actions in the armoury of the LBC as the regulator. At the base of the pyramid, the LBC uses coaxing and persuasion as compliance mechanisms. Where this proves unsuccessful, an increasingly stringent stance would be taken against the non-compliant FBO in order to secure compliance with regulatory obligations. The sanctions are undertaken in an incremental manner, with increasing punitive measures being implemented. This enforcement matrix allows different types of sanctions to be applied to differing regulatory arenas.

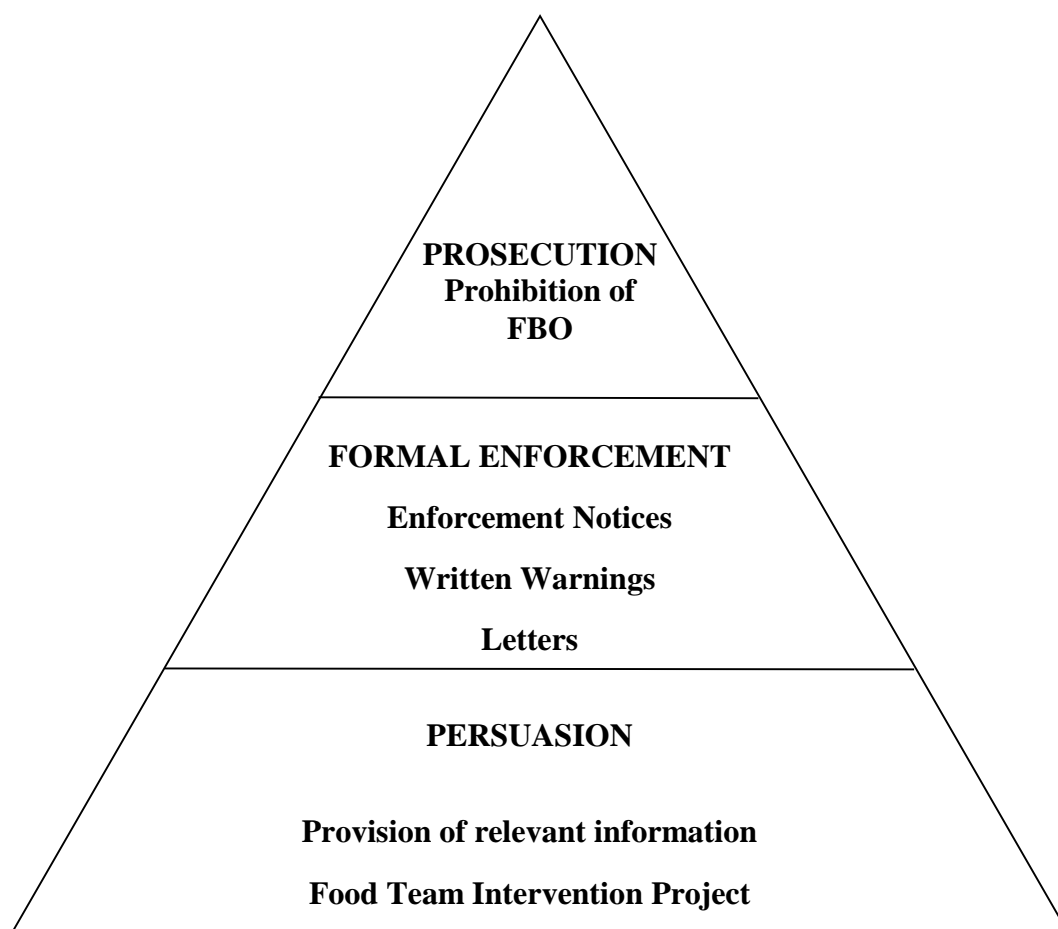


Figure 2. The TFT enforcement strategy applied to the FBOs of the study populations

The use of the enforcement pyramid makes deviation away from cooperation a less attractive proposition than when the regulator has only a single deterrent option. The TFT strategy provides the LBC, as the food authority, with the potential to increase cooperation when they escalate punitive measures in a proportional manner. Such an approach accords with the Enforcement Policy of the LBC Regulatory Services Division.

The application of the TFT strategy and the implementation of the Enforcement Pyramid can be used by the LBC in order to achieve regulatory compliance in most situations. Non-compliant FBOs ascend the Enforcement Pyramid and become recipients of escalating penalties. If such a strategy were applied to the FBOs within the study populations, non-compliant FBOs would be assigned higher risk ratings and would be subject to increased frequencies of programmed food hygiene inspections in

accordance with the Food Safety Act Code of Practice 2014 and concomitant enforcement action.

The tough stance against regulated FBOs who do not exhibit a cooperative attitude provides a motivator for compliance, allowing the emergence of the regulated actor's cooperative self. When the non-compliant behaviour is abandoned in favour of cooperation, the regulator adopts the standpoint of forgiveness and the FBO descends through the Enforcement Pyramid (see Figure 2).

The implementation of the compliance tools discussed – the TFT strategy and the Enforcement Pyramid – would allow the LBC as the regulator to muster an array of deterrent weapons in response to non-compliance with regulatory obligations. When applied correctly, the outcome of compliance and the actions implemented to achieve it will be equitable, proportionate and transparent.

In utilising these tools, the LBC, as the food authority, would act in the manner of a Benign Big Gun – an agency that “speaks softly whilst carrying very big sticks”. It would keep punishment in the background until there is no alternative other than to move it to the foreground; it is the spectre of the regulator's powers rather than the actual use of such powers that facilitates compliance. It is important for the LBC as the regulator to have available a range of enforcement options in order to be responsive to the non-compliance it encounters in any given situation.

#### **4.6.3 The future of enforcement of food safety legislation**

The political deregulatory environment at the time of writing the research (2014) may impact on food safety legislation and form an additional barrier to the implementation of HACCP based food systems within SME food businesses. Hampton (2005) expressed a general concern at the cumulative burden of regulation on small businesses.

In 2010, a Policy Paper “*Regulation in the Post – Bureaucratic Age*,” stated that there are areas in the UK which are chronically and severely over regulated, that red tape

costs SMEs £9.3 billion each year and that regulatory compliance takes 34 hours per month for each firm (Conservative Party, 2010).

One of the most resented forms of regulatory burden in SMEs is the volume of information which has to be kept and provided to the regulator (Conservative Party, 2010). This has relevance to the record keeping requirement for the control and monitoring of CCPs required for the implementation of a HACCP based system.

In terms of deregulation, the Policy Paper called for a fundamental culture shift amongst policy makers through structural reforms. Such reforms included institutional changes that would reduce the volume of new regulations and remove regulations that were found to be ineffective or overly burdensome (Conservative Party, 2010).

An objective of the government was to create a new relationship between regulators and businesses based on a default setting of trust rather than distrust (Department for Business Innovation and Skills, 2011). Such an approach accords with the Benign Big Gun model and the TFT approach proposed by this research. It further proposes effective channels for businesses to challenge regulations in a reform strategy reflecting the inputs from businesses that they felt “over inspected” by regulators (Department for Business Innovation and Skills, 2011).

Ward (2011) believed that the government was of the opinion that regulatory enforcement was draining businesses of time and resources and that such enforcement was too often heavy handed, inefficient and risk averse. The Government wanted a transparent, light touch system based on real risks. The effective implementation of a HACCP based system would be consistent with this approach.

The Government’s intention was to review all regulations, examine the case for their continued existence and make sure each regulator was making the fullest possible use of alternatives to conventional enforcement methods, reducing state activity wherever possible.

This anti-regulatory enforcement stance was facilitated by the Government’s proposal to allow businesses to have a direct influence on how enforcement operates and be

provided with mechanisms to challenge regulators and enforcement officers as a routine part of the system (Department for Business Innovation and Skills, 2011).

The government was considering allowing businesses to be given the opportunity of “earned recognition” where positive incentives are given to businesses that make efforts to comply with their statutory obligations. The Food Standards Agency believed earned recognition was a positive direction for the food industry to take. It considered three approaches to earned recognition. These were:

1. Third Party Assurance Schemes, which would verify, through regular independent inspections, that food businesses were meeting the required standards.
2. The Primary Authority Scheme, which would provide a statutory framework for regulatory partnerships between local authorities (the food authorities for food safety) and national companies, taking into account a food business’s own internal assurance, data and management systems.
3. Compliance Performance History, which considered the past compliance history of individual food businesses (FSA, 2011).

The intention of the FSA in the promotion of earned recognition was to ease the regulatory burden on compliant food businesses by a reduction in the frequency and types of intervention such businesses would receive. It aimed to improve the targeting of intervention activity, deploying the resources of food authorities where improvement was most needed i.e. in poorly performing food businesses.

The independence of Third Party Assurance Schemes could be subject to potential abuse by powerful businesses. Such a scheme would require the involvement of food authorities’ resources in assessing compliance and the provision of guidance to food businesses.

All of the above approaches require the input of food authorities, and the extent of this input and the potential savings are yet to be quantified. The potential exists for

enforcement officers being required to assist such food businesses to meet their statutory obligations without the necessary enforcement powers to deal with significant legal contraventions.

By ensuring that regulators review their policies, the Government was confident that the Code would help deliver a risk-based approach to the exercise of regulatory activity. High-performing, compliant businesses would bear less of a burden, with regulators focusing their efforts on rogue and higher-risk businesses. The Government laid the Code before Parliament in the autumn of 2007, and it came into force in April 2008.

The government intends to deal with what they describe as overzealous enforcement by reviewing specific regulatory sectors to ensure that enforcement arrangements are appropriate, proportionate and fit for purpose and appropriately risk based (Department for Business Innovation and Skills, 2011).

The Intervention Project proposed in this research addresses a government concern regarding the need for businesses to know what regulatory obligations are applicable and the assistance provided by the regulator. It further addresses the government's desire for regulators to provide clear and simple guidance on the steps a business needs to take to comply with its regulatory obligations.

This research argues that a combination of increasing deregulation and the proposed reduction in the powers of inspectors will form an additional constraint to compliance with the requirement for SME food businesses to implement HACCP based systems.

Counter arguments to the deregulation model have been promulgated. Kidney (2011) believed that when subject to detailed examination most regulation is justified and removing it would create unacceptable risks. Kidney (2011) further believed that hundreds of thousands of SMEs value visits from enforcement officers, and cited the endorsement of trade bodies' representatives in support of this view.

Weight is added to this argument by figures produced by the FSA which showed that food hygiene prosecutions and related enforcement action throughout the UK are still commonplace (FSA, 2006).

The present day regulatory landscape is complex and may lead to confusion amongst the regulators and the regulated as to the optimum route to compliance. Which one of the two opposing arguments will prevail is difficult to determine. However, the resulting regulatory enforcement model will have a significant effect on the implementation of food safety management systems in SME food businesses and the level of associated enforcement by the food authorities.

# **Chapter 5**

## **Conclusions**

## CHAPTER 5

### 5.0 CONCLUSIONS

This research has examined three linked hypotheses relating to the implementation of hazard analysis / HACCP based food safety management systems in medium to high risk SME food businesses in the LBC. Although the research was undertaken within a single inner London local authority, it is argued that the large number of food businesses within a condensed geographical area and the wide spectrum of food establishments in terms of ethnicity of FBOs and the food businesses' main activities, provide a justifiable basis for wider applicability of the outcomes.

#### 5.1 The first hypothesis

The first hypothesis was that “*Constraints exist that result in making the various components of Regulation 4. (3) too complex for FBOs of SMEs to effectively implement in the absence of extensive or disproportionate resources.*” The existence of constraints was clearly demonstrable by the low level of compliance with the hazard analysis requirement. The research identified a hierarchy of constraints that hindered the implementation by FBOs of the hazard analysis requirement.

The absence of various hygiene prerequisites formed a set of constraints that increased the extent of non-compliance. The lack of the hygiene prerequisites was surprising since all the food businesses were subject to regular planned food hygiene inspections by the food authority. This finding suggested a general lack of capacity and willingness on behalf of FBOs to comply with their regulatory obligations.

The constraints identified by FBOs as hindering hazard analysis implementation were collated in a hierarchical order expressed as a weighted average for each constraint. The most significant of these were poor knowledge and understanding derived from a lack of information, practical guidance and training opportunities.

The general inertia to implement the hazard analysis requirement was the result of a combination of three causative factors. The first was incapacity of FBOs to

comprehend the relatively complex nature of the hazard analysis requirement. There was a significant level of ignorance of the term and meaning of hazard analysis amongst FBOs / managers.

The second causative factor was the existing relationship between the FBO and the LBC, in its role as the food authority. The command and control legislative requirements predating the Food Safety (General Food Hygiene) Regulations 1995 were generally relatively simple for FBOs to understand. A common assumption made by FBOs was that they were legally compliant once the measures required by FSOs during regulatory encounters were met.

The final causative factor was the descriptive and proactive nature of the hazard analysis requirement which necessitates the adoption of a different approach to food safety. Reg 4.(3) required a FBO to self-regulate the hazard analysis process. This in turn required a FBO to possess both the capacity to undertake the process and the willingness and motivation to do so. The absence of these constituents resulted in the low level of compliance, awareness and knowledge of hazard analysis found in this research.

The low level of compliance and the constraints identified in this research reflected the relatively complex nature of the hazard analysis requirement with respect to the FBOs' capacity to implement it. This, combined with the shifting paradigm from reactive to proactive legislation, endorses the validity of the first hypothesis.

## **5.2 The second hypothesis**

The second hypothesis was *“that where implemented by the FBOs of SMEs, the purpose of hazard analysis was the avoidance of legal action rather than a procedure to control food safety risks”*.

From the primary data obtained during this research this hypothesis was found to be invalid, with only a minority of FBOs claiming that avoidance of legal action was their principal motivation. The motivator for compliance most frequently identified

by FBOs was a composite of the avoidance of legal action and a desire to produce safe food.

### **5.3 The third hypothesis**

The final hypothesis was *“that a regulatory model based on cooperation between the enforcing authority and the FBO utilising simple guidelines is more effective than a punitive approach for the successful implementation of hazard analysis.”*

The Intervention Project aimed to address the constraints identified by FBOs / managers and thereby improve food safety standards in high risk food businesses within the LBC. There was a deliberate diminution of the emphasis given to the analysis component of the hazard analysis requirement, with the main focus being the control and monitoring of generic CCPs. The project produced an improved outcome in terms of the implementation of HACCP based systems, and thus an improvement in food safety, in the food businesses involved in the project. This was reflected in a general decrease in risk ratings among the participants. Such results were obtained with limited resources in terms of FSO inputs and finance.

This outcome was achieved by the FBOs / managers implementing generic controls and monitoring such controls in a prescriptive manner. The project used simple guidelines, namely visual prompts and a free simplified documented food safety management system which was provided to each participant for adaptation and implementation within their individual food businesses. The resultant improvement in food safety standards confirms the validity of the hypothesis as it demonstrates that SME food businesses need support if they are to implement HACCP based systems effectively.

The approach adopted in the Intervention Project is somewhat different from that of Safer Food Better Business. Since the inception of Safer Food Better Business, it has been actively promoted by the Food Standards Agency as being straightforward, accessible and user friendly. Experience has found this claim to be over ambitious. Some FBOs have found the volume of the documentation daunting and the relative

complexity of the wording used difficult to read and comprehend. The Intervention Project attempted to overcome these difficulties through the use of simple language and easy-to-use monitoring sheets; the results of the project suggest this approach was effective.

This research argues that implementing generic food safety controls and monitoring them in a prescriptive manner will achieve a higher degree of food safety when given greater emphasis and attention than the analysis component of the process. It is acknowledged that legal compliance with Reg 4.(3) requires the inclusion of both the analysis and implementation components. However, a conclusion drawn from this research is that improved levels of food safety will result from allowing the implementation component to fulfil the dominant role.

This research found that the food authority and the FBO viewed compliance with the regulatory obligation differently. The food authority viewed compliance in an academic sense as the enforcement of a legal requirement of self-regulation. The FBOs viewed compliance as undertaking the requirements of a FSO following a regulatory encounter. Thus there was a dichotomy of views between the parties based on the one hand on previous prescriptive legislation and on the other hand on the current descriptive legislation. This reflected the effects of the long history of food control with its origins in prescribed Victorian interventionism colliding with the proactive self-regulatory nature of the hazard analysis requirement.

In essence, the low level of compliance with the hazard analysis requirement in the food businesses of study populations was of concern. Its explanation is found in the original applications of HACCP, which operated in purpose built hygienic single line production units, using appropriately trained and supervised food handlers. Such a scenario is a long way from its use within the food businesses of the study populations where the enforcer and enforcer danced around a concept which to the majority of FBOs / managers was theoretically elaborate and arduous in application. The findings of this work suggest that in the absence of effective interventions this sophisticated concept, with its origins in manned spaceflight, is unsuitable in terms of its practical applicability in SME food businesses.

# **Chapter 6**

## **Recommendations**

## **CHAPTER 6**

### **6.0 RECOMMENDATIONS**

The outcome of this research permits the following recommendations to be made.

#### **6.1 The prescriptive requirements of hazard analysis / Article 5**

The foundation of any HACCP based system such as hazard analysis /Article 5 is the presence of hygiene prerequisites. These components were legislative requirements on FBOs prior to 1995 and took the form of prescriptive command and control legislation. There is a long history of compliance with such requirements and FBOs were generally well acquainted with this type of enforcement regime.

Therefore it is recommended that the hygiene prerequisites be made specific requirements during regulatory encounters using the mechanisms within the enforcement pyramid. The implementation of escalating sanctions for non-compliance would initiate momentum towards regulatory compliance, the rationale being that such requirements are relatively easy for FBOs to understand due to the simplicity of the demands and the familiarity of such statutory obligations.

It is recommended that the LBC, as the food authority, should implement a compliance strategy in order to achieve enforced self-regulation of the hazard analysis / Article 5 requirement which is focused, where practicable, on prescriptive rather than descriptive measures. The measures would be simple prescriptive actions at CCPs that would be within a FBO's capacity to implement, control and monitor, albeit that the rationale underlying the implementation of such measures may not be fully understood by all FBOs.

It is also recommended that FBOs are encouraged to provide food hygiene training to food handlers in operational situations that is orientated towards prescriptive controls at CCPs and the monitoring and recording of such controls. Such an

approach would have the benefit of both enhancing the effectiveness of HACCP based system implementation and assist in meeting the training requirement of EC Regulation 852 / 2004.

## **6.2 Practical assistance in the implementation of HACCP based systems**

It is recommended that the LBC, when undertaking its enforcement role, should implement a transparent approach to compliance in order to promote the perception amongst the enforced sector that they are being dealt with in a fair and equitable manner. In order for the LBC, to be perceived as a “caring regulator,” practical assistance based on the Intervention Project should be provided free to the FBOs of high risk food businesses. This would take the form of coaching sessions incorporating the hygiene prerequisites and prescriptive control measures and monitoring of CCPs. In order to achieve this, all food businesses risk rated A or B would be offered free coaching sessions and advice from FSOs. These would be supported by the provision of written guidance which is practically based, kept as simple as possible for ease of understanding.

An objective of the Intervention sessions will be to encourage the belief amongst FBOs that the essential control and monitoring components of a HACCP based system can be successfully applied in their food businesses through the implementation of simple prescriptive actions.

In addition to the Intervention sessions, it is desirable that ongoing advice should be available to support FBOs in the implementation of food safety management systems. It is recommended that the Food Safety Team of the LBC designate a clear contact point for FBOs involved in this task in order to provide them with guidance as necessary and also encouragement to complete the task.

## **6.3 The approach to non-compliant food businesses**

A graduated approach to regulatory compliance forms part of the Consumer Services Enforcement Policy of the LBC. During its initial stages this approach uses encouragement and persuasion in order to achieve regulatory compliance.

It is recommended that all non-compliant FBOs are made aware of the general requirements of hazard analysis / Article 5 and how they apply to their food businesses. Particular attention should be given to the hygiene prerequisites and the prescriptive controls and monitoring required as part of their HACCP based system.

If enforced self-regulation is to be effective, the LBC would require the ability to implement graduated escalating interventions. In these circumstances, the path of compliance will be preferable to that of non-compliance, as the FBO will be aware of the benefits of cooperation with the LBC as the regulator. The tough stance taken against non-compliant FBOs will provide a specific motivator towards compliance.

As part of the Tit for Tat strategy it is recommended that:

- i. FBOs / managers are informed of the incentive of the reduced frequency of programmed food hygiene inspections and related interventions when HACCP based systems are effectively implemented within their food businesses.
- ii. restorative justice is used in cases of non-compliance. The LBC should enter into dialogue, use persuasion and provide simple technical advice to assist well-intentioned FBOs to improve their level of compliance.
- iii. the LBC as the food authority should initiate responsive enforcement measures when the persuasive approach fails and use the threat of penalties as a motivator towards compliance.

It is also recommended that successful prosecutions for food hygiene offences be publicised in the local press. Such publicity will ensure that the threat of enforcement action by the food authority will act as a deterrent, as non-compliant FBOs will be made aware that their own non-compliance could result in legal action by the food authority.

## **6.4 New food businesses**

As start-up businesses are more receptive to interventions, it is recommended that the FBOs of all newly registered food businesses risk rated A or B are informed in writing of their legal requirement to implement a HACCP based system. They should also be informed of the sources of assistance available, in order to promote ownership and understanding of this legal requirement.

It is further recommended that the FBOs of all newly registered food businesses risk rated A or B are invited to attend an Intervention session. Those non-compliant FBOs who do not attend should be subject to appropriate enforcement action using a graduated approach as described by the enforcement pyramid.

## **6.5 National publicity**

The Food Standards Agency's National Food Hygiene Rating Scheme has yet to reach its full potential as a means of informing the consumer of the standards of hygiene in food businesses. It would be expected that consumers who look at and understand the food hygiene ratings of food businesses will take them into account when making choices. Therefore the pressure on food businesses to improve food hygiene will come from a motivational pull through customer behaviour change and also through competitive pressure from other food businesses. The overall effect would be to benefit those businesses which have achieved demonstrably high standards of food hygiene and to disadvantage those which have not.

It is recommended that the FSA publicise the National Food Hygiene Rating Scheme more effectively in order to increase consumer awareness of the scheme.

It is also recommended that the LBC should continue with the National Food Hygiene Rating Scheme as an incentive for FBOs to implement HACCP based systems within their food businesses.

The display of the Hygiene Rating Scheme Certificate within food businesses is still not a legal requirement in England. It is further recommended that the display of a

Food Hygiene Rating Scheme Certificate in a conspicuous place clearly visible to customers be made a regulatory requirement in all food businesses in England.

## **6.6 Achieving compliance in a deregulatory environment**

The increasing momentum towards deregulation may modify or remove any legislation considered by some policy makers to be burdensome. This creates the potential for a reduction in the enforcement powers of regulators. Therefore the development of good working relationships between the regulator and the regulated can promote and sustain compliance with regulatory obligations, where the armoury of enforcement tools held by the regulator is reduced.

It is recommended that the LBC should foster good working relationships with FBOs in order to counteract the potential loss of enforcement powers.

It is further recommended that FSOs should acknowledge and praise improvements made by FBOs in order to motivate them towards continued compliance with their regulatory obligations.

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# Appendices

## Appendices

### Primary Data from Entire Populations

#### Types of Food Businesses Included in the Survey

Where percentages are expressed they are rounded to the nearest whole number.

##### 1. A risk rated food businesses

Type of Food business	Number of Businesses
Butcher	1
Cafe	3
Hospital Kitchen	1
Hotel	1
Public House	2
Restaurant	12
Take Away	14
<b>Total</b>	<b>34</b>

##### 2. B risk rated food businesses

Type of Food business	Number of Businesses
Bakery	4
Butcher	12
Cafe	28
Care Home	7
College Kitchen	1
Day Centre	3
Home Caterer	1
Hospital Kitchen	1
Hotel	3
Manufacturer	1
Market Stall	3
Night Club	1
Nursery	6
Pleasure Boat	1
Public House	13
Restaurant	43
Retailer	1
School Kitchen	11
Staff Canteen	0
Supermarket	2
Take Away	27
<b>Total</b>	<b>169</b>

### 3. C risk rated food businesses

Type of Food business	Number of Businesses
Bakery	4
Butcher	0
Cafe	55
Care Home	4
College Kitchen	0
Day Centre	0
Home Caterer	0
Hospital Kitchen	0
Hotel	27
Manufacturer	0
Market Stall	0
Night Club	0
Nursery	4
Pleasure Boat	0
Public House	40
Restaurant	90
Retailer	22
School Kitchen	3
Staff Canteen	8
Supermarket	0
Take Away	40
Others	12
<b>Total</b>	<b>309</b>

### 4. FBO ethnicity

Ethnic Origin	A Risk Rating Number of Food Businesses	B Risk Rating Number of Food Businesses	C Risk Rating Number of Food Businesses
Asian Other	6	17	33
Bangladeshi	4	12	5
Black African	0	3	2
Black Other	0	3	2
Black British	0	1	1
Chinese	9	11	6
Company Owned	6	62	157
Indian	0	4	12
Pakistani	1	5	7
Turkish / Cypriot	0	10	8
White Other	8	26	40
White UK	0	15	30
White Irish	0	0	6
<b>Total</b>	<b>34</b>	<b>169</b>	<b>309</b>

**5. Main language of communication of food business operators A, B and C risk rated businesses**

<b>Risk Rating</b>	<b>Chinese</b>	<b>English</b>	<b>Italian</b>	<b>Japanese</b>	<b>Turkish</b>	<b>Korean</b>	<b>Others</b>	<b>Total</b>
<b>A</b>	6	20 (59%)	0	2	0	3	3	<b>34</b>
<b>B</b>	2	160 (95%)	0	2	0	0	5	<b>169</b>
<b>C</b>	2	291 (94%)	3	4	4	0	5	<b>309</b>

**6. Food business operators / managers foundation food hygiene qualifications (Level II) Hygiene Certificate**

<b>Risk Rating</b>	<b>With Level II</b>	<b>No Level II</b>
<b>A</b>	30 (88%)	3 (9%)
<b>B</b>	121 (71%)	30 (18%)
<b>C</b>	217 (70%)	46 (15%)

**7. Food business operators / managers food hygiene qualifications (Level 3 or 4) Hygiene Certificate**

<b>Risk Rating</b>	<b>Number of Food Business Operators / Managers</b>
<b>A</b>	1 (3%)
<b>B</b>	18 (11%)
<b>C</b>	46 (15%)

**8. Food hygiene training qualifications of food handlers (Level II)**

<b>Risk Rating</b>	<b>No of Food Handlers With Level II</b>	<b>No of Food Handlers No With Level II</b>	<b>Total Number of Food Handlers</b>
<b>A</b>	115 (71%)	46 (29%)	161
<b>B</b>	339 (77%)	101 (23%)	440
<b>C</b>	905 (62%)	566 (38%)	1471

**9. Level of supervision of food handlers without food hygiene qualifications**

<b>Risk Rating</b>	<b>Supervision Provided for Food Handlers</b>	<b>Supervision Not Provided for Food Handlers</b>	<b>Not Applicable</b>
A	20 (61 %)	13 (39% )	1
B	86 (63 %)	50 (37 %)	33
C	182 (72%)	71 (28 % )	56

**10. Food business operator's knowledge of applicable food safety legislation**

<b>Risk Band</b>	<b>Correct</b>	<b>Incorrect</b>	<b>Partially Correct</b>	<b>Don't Know</b>
A	2 (6 %)	2(6 %)	4 (12 %)	26 (76 %)
B	9 (5 %)	7 (4 %)	24 (14 %)	129 (77%)
C	38 (12 %)	15 (5 %)	58 (19 %)	198 (64 %)

**11. Suitability of premises external structure**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>
A	32 (94%)	2 (6%)
B	165 (98%)	4 (2%)
C	305 (99%)	4 (1%)

**12. Suitability of premises internal structural repair of food rooms**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>
A	30 (88%)	4 (12%)
B	159 (94%)	10 (6%)
C	296 (96%)	13 (4%)

**13. Premises structure cleanliness**

<b>Risk Rating</b>	<b>Clean</b>	<b>Dirty</b>
A	26 (76%)	8 (24%)
B	141 (83%)	28 (17%)
C	292 (94%)	17 (6%)

**14. Suitability of internal layout for hygienic food preparation**

Risk Rating	Yes	No
A	18 (53%)	16 (47%)
B	135 (80%)	34 (20%)
C	283 (94%)	26 (6%)

**15. Inadequate space for hygienic food preparation**

Risk Rating	Yes	No
A	20 (59%)	14 (41%)
B	56 (33%)	113 (67%)
C	86 (28%)	223 (72%)

**16. Wash hand basins with hot and cold water in / near food preparation rooms**

Risk Rating	Yes	No
A	21 (62%)	13 (38%)
B	131 (78%)	38 (22%)
C	266 (86%)	43 (14%)

**17. Adequate food preparation surfaces (excluding chopping / cutting boards)**

Risk Rating	Yes	No
A	21 (62%)	13 (38%)
B	143 (85%)	26 (15%)
C	290 (94%)	19 (6%)

**18. The use of chopping / cutting boards for food preparation**

Risk Rating	Yes	No
A	33 (97%)	1 (3%)
B	156 (92%)	13 (8%)
C	276 (89%)	33 (11%)

**19. Absence of visible contamination on chopping / cutting boards**

Risk Rating	Yes	No	NA
A	20 (59%)	13 (41%)	1
B	132 (85%)	24 (15%)	13
C	254 (92%)	22 (8%)	33

**20. Chopping / cutting boards being correctly used (cleaning / disinfection)**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
<b>A</b>	20 (61%)	12 (39%)	2
<b>B</b>	126 (81%)	30 (19%)	13
<b>C</b>	253 (91%)	23 (9%)	35

**21. Visible cleanliness of food utensils in use during food preparation**

<b>Risk Rating</b>	<b>Clean</b>	<b>Percentage of Food Businesses</b>
<b>A</b>	30	(88%)
<b>B</b>	156	(92%)
<b>C</b>	287	(92%)

**22. Personal hygiene of food handlers**

<b>Risk Rating</b>	<b>Adequate</b>	<b>Inadequate</b>
<b>A</b>	25 (74%)	9 (24%)
<b>B</b>	150 (89%)	19 (11%)
<b>C</b>	298 (96%)	11 (4%)

**23. Arrangement for reporting sickness in food handlers and their exclusion from food handling activities**

<b>Risk Rating</b>	<b>Adequate</b>	<b>Inadequate</b>
<b>A</b>	21 (62%)	13 (38%)
<b>B</b>	119 (70%)	50 (30%)
<b>C</b>	258 (83%)	51 (17%)

**24. Cleaning schedule for food preparation rooms**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>
<b>A</b>	6 (18%)	28 (78%)
<b>B</b>	66 (39%)	103 (61%)
<b>C</b>	128 (41%)	18159%)

**25. The extent of implementation where a cleaning schedule was present**

<b>Risk Rating</b>	<b>Cleaning Schedule Present</b>	<b>Cleaning Schedule Implemented</b>
<b>A</b>	6	3 (50%)
<b>B</b>	66	53 (80%)
<b>C</b>	128	119 (93%)

**26. Food equipment without visible contamination**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
<b>A</b>	22 (79%)	6 (21%)	6
<b>B</b>	90 (87%)	13 (13%)	66
<b>C</b>	168 (93%)	13 (7%)	128

**27. Visible cleanliness food utensils present within food businesses**

<b>Risk Rating</b>	<b>Clean</b>	<b>Percentage of Food Businesses</b>
<b>A</b>	28	(82%)
<b>B</b>	150	(88%)
<b>C</b>	282	(91%)

**28. Staff understanding of cleaning responsibilities**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>
<b>A</b>	19 (56%)	15 (44%)
<b>B</b>	141 (83%)	28 (17%)
<b>C</b>	289 (94%)	20 (6%)

**29. Use of sanitisers / disinfectants on food equipment / utensils / food contact surfaces**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>
<b>A</b>	23 (68%)	11 (32%)
<b>B</b>	130 (77%)	39 (23%)
<b>C</b>	264 (85%)	45 (15%)

**30. Evidence of pest activity in food premises**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>
<b>A</b>	7 (21%)	27 (79%)
<b>B</b>	32 (19%)	137 (81%)
<b>C</b>	49 (16%)	260 (84%)

**31. Evidence of pest control treatments being undertaken and presence of records of treatments**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>
<b>A</b>	6 (86%)	1 (14%)
<b>B</b>	25 (78%)	7 (22%)
<b>C</b>	42 (86%)	7 (14%)

**32. Evidence of food handlers not washing hands after handling raw food / before handling ready to eat food and inadequate wash hand facilities**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>
<b>A</b>	15 (44%)	19 (56%)
<b>B</b>	50 (30%)	119 (70%)
<b>C</b>	39 (13%)	261 (87%)

**33. Raw food stored above or in contact with cooked / ready to eat food**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
<b>A</b>	1 (2%)	33 (98%)	0
<b>B</b>	24 (14%)	142 (86%)	3
<b>C</b>	19 (6%)	283 (94%)	7

**34. One or more refrigerators operating above 8 Celsius**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
<b>A</b>	13 (38%)	21 (62%)	0
<b>B</b>	31 (19%)	135 (81%)	3
<b>C</b>	34 (11%)	270 (89%)	5

**35. Chilled display unit operating above 8 Celsius**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
<b>A</b>	12 (36%)	21 (64%)	1
<b>B</b>	21 (26%)	61 (74%)	87
<b>C</b>	44 (26%)	128 (74%)	137

**36. The presence of temperature monitoring records for chilled storage**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
<b>A</b>	10 (29%)	24 (71%)	0
<b>B</b>	62 (37%)	106 (63%)	1
<b>C</b>	157 (51%)	148 (49%)	4

**37. Dual use of same food preparation surfaces without effective cleaning / sanitising between uses**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
<b>A</b>	12 (35%)	22 (65%)	0
<b>B</b>	42 (26%)	121 (74%)	6
<b>C</b>	21 (7%)	270 (93%)	18

**38. High risk food adequately cooked to achieve a minimum core temperature of 75 Celsius or above**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
<b>A</b>	28 (85%)	5 (15%)	1
<b>B</b>	145 (96%)	6 (4%)	18
<b>C</b>	264 (95%)	15 (5%)	30

**39. Use of thermometer to monitor cooking / hot holding temperatures (includes foods not cooked on the premises but delivered cooked and reheated)**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
<b>A</b>	10 (30%)	23 (70%)	1
<b>B</b>	24 (14%)	143 (86%)	2
<b>C</b>	137 (46%)	155 (54%)	17

**40. The keeping of records of temperature monitoring for cooked / hot held food**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>NA</b>
<b>A</b>	10 (30%)	23 (70%)	1
<b>B</b>	34 (23%)	117 (67%)	18
<b>C</b>	99 (35%)	180 (65%)	30

**41. Holding of high risk cooked / ready to eat foods at ambient temperature**

Risk Rating	Yes	No	NA
A	6 (18%)	28 (82%)	0
B	24 (14%)	143 (86%)	2
C	28 (9%)	278 (91%)	3

**42. Hot held high risk food held at a minimum temperature of 63 Celsius**

Risk Rating	Yes	No	NA
A	8 (35%)	15 (65%)	11
B	33 (49%)	34 (51%)	102
C	49 (40%)	75 (60%)	185

**43. Visible contamination on cleaning cloths, scourers, sponges and other cleaning implements**

Risk Rating	Yes	No	NA
A	5 (15%)	29 (85%)	0
B	64 (38%)	105 (62%)	0
C	68 (22%)	238 (78%)	3

**Analysis of Hazard Analysis / HACCP Components**

**44. Reg 4 (3) (a) / Article 5 analysis of potential food hazards in food business operations (number of food businesses)**

Risk Rating	Microbiological	Chemical	Physical
A	33 (97 %)	3 (9 %)	10 (29%)
B	163 (96 %)	20 (12 %)	66 (39%)
C	300 (97 %)	85 (28 %)	157(51 %)

**45. Reg 4 (3) (b) / Article 5 analysis identification of the points in those operations where food safety hazards may occur (number of food businesses)**

Risk Rating	Correct	Incorrect	Partial Correct	Don't Know	Total Number
A	4 (12 %)	2 (5%)	22 (65%)	6 (18%)	34
B	42 (25%)	0 (0%)	120 (59%)	7 (16%)	169
C	73 (24%)	4 (2%)	217 (70%)	15 (4%)	309

**46. Analysis of Reg 4 (3) (b) / Article 5 analysis identification of the points in those operations where food safety hazards may occur (number of food businesses). Responses from food business operators / managers**

<b>Risk Rating</b>	<b>Preparation (including cooking)</b>	<b>Storage</b>	<b>Delivery</b>	<b>Service</b>
<b>A</b>	32 (94%)	11 (32%)	1 (3%)	0 (0%)
<b>B</b>	162 (96%)	94 (56%)	33 (20%)	0 (0%)
<b>C</b>	270 (87%)	210 (68%)	66 (21%)	11 (4%)

**47. Reg 4 (3) (c) / Article 5 deciding which points in those operations that are critical to ensuring food safety (number of food businesses)**

<b>Risk Rating</b>	<b>Correct</b>	<b>Incorrect</b>	<b>Partial Correct</b>	<b>Don't Know</b>	<b>Total Number</b>
<b>A</b>	3 (9%)	5 (15%)	24 (71%)	2 (5%)	34
<b>B</b>	30 (18%)	0 (0%)	126 (75%)	13 (6%)	169
<b>C</b>	52 (17%)	5 (2%)	237 (77%)	15 (4%)	309

**48. Reg 4 (3) (c) / Article 5 deciding which points in those operations that are critical to ensuring food safety (number of food businesses). Responses from food business operators / managers**

<b>Risk Rating</b>	<b>Preparation (including cooking)</b>	<b>Storage</b>	<b>Delivery</b>	<b>Service</b>
<b>A</b>	27 (79%)	8 (23%)	0 (0%)	0 (0%)
<b>B</b>	149 (88%)	25 (15%)	19 (11%)	5 (3%)
<b>C</b>	286 (93%)	164 (53%)	1 (1%)	19 (6%)

**49. Reg 4 (3) (d) Article 5 identification and implementation of effective control and monitoring procedures at those critical points (number of food businesses)**

<b>Risk Rating</b>	<b>Correct</b>	<b>Incorrect</b>	<b>Partial Correct</b>	<b>Don't Know</b>	<b>Total Number</b>
<b>A</b>	7 (21%)	0 (0%)	24 (71%)	3 (8%)	34
<b>B</b>	38 (22%)	1 (0.5%)	124 (73%)	6 (5%)	169
<b>C</b>	84 (27%)	6 (2%)	211 (68%)	8 (3%)	309

**50. Reg 4 (3) (d) Article 5 identification and implementation of effective control and monitoring procedures at those critical points (number of food businesses). Responses from food business operators / managers**

<b>Risk Rating</b>	<b>C</b>	<b>PH</b>	<b>TC</b>	<b>S</b>	<b>PC</b>	<b>SR</b>	<b>TCK</b>	<b>SCR</b>	<b>FSM</b>	<b>T</b>	<b>PCC</b>
<b>A</b>	13 (38%)	9 (26%)	12 (35%)	1 (3%)	3 (9%)	4 (12%)	0	0	0	4 (12%)	0
<b>B</b>	80 (47%)	36 (21%)	84 (50%)	41 (24%)	13 (38%)	13 (38%)	61 (36%)	41 (24%)	6 (4%)	4 (2%)	0
<b>C</b>	191 (62%)	129 (42%)	119 (38%)	110 (35%)	7 (2%)	103 (33%)	126 (41%)	0	0	75 (24%)	12 (4%)

**Key to Appendix 50**

**C** = cleaning / disinfection  
**PH** = personal hygiene  
**TC** = temperature control  
**S** = supervision of food handlers  
**PC** = pest control  
**SR** = stock rotation  
**TCK** = thorough cooking of high risk foods  
**SCR** = separate cooked / raw foods  
**FSM** = comply with Food Safety Manual  
**T** = training of food handlers  
**PCC** = implement measures to prevent cross contamination

**51. Reg 4 (3) (e) / Article 5 review of the analysis of food hazards, the critical points and the control and monitoring procedures periodically and whenever the food business operations change**

<b>Risk Rating</b>	<b>Correct</b>	<b>Incorrect</b>	<b>Partial Correct</b>	<b>Don't Know</b>	<b>Total Number</b>
<b>A</b>	0	25 (74%)	0	9 (26%)	34
<b>B</b>	12 (7%)	127 (75%)	0	30 (18%)	169
<b>C</b>	0	283 (92%)	0	26 (8%)	309

**52. Reg 4 (3) (e) / Article 5 review of the analysis of food hazards, the critical points and the control and monitoring procedures periodically and whenever the food business operations change. Incorrect responses from food business operators/ managers**

<b>Risk Rating</b>	<b>A</b>		<b>B</b>		<b>C</b>	
<b>NCC</b>	3	(9%)	65	(38%)	155	(50%)
<b>SS</b>	13	(38%)	47	(28%)	106	(34%)
<b>TM</b>	10	(29%)	21	(12%)	56	(18%)
<b>SF</b>	3	(9%)	1	(0.5%)	2	(0.6%)
<b>PH</b>	1	(3%)	1	(0.5%)	27	(9%)
<b>CE</b>	0	(0%)	10	(6%)	25	(8%)
<b>T</b>	1	(3%)	4	(2%)	4	(1%)
<b>TF</b>	0	(0%)	6	(4%)	3	(1%)
<b>CGI</b>	0	(0%)	3	(2%)	0	(0%)
<b>MCCP</b>	0	(0%)	7	(4%)	17	(5%)
<b>SR</b>	0	(0%)	0	(0%)	0	(0%)
<b>VI</b>	0	(0%)	0	(0%)	10	(3%)
<b>I</b>	0	(0%)	3	(2%)	1	(0.3 %.)
<b>E</b>	0	(0%)	1	(0.5%)	0	(0%)
<b>DK</b>	10	(29%)	30	(18%)	10	(3%)

**NCC** = no customer complaints  
**SS** = supervise staff  
**TM** = temperature monitoring  
**SF** = smell food  
**PH** = personal hygiene  
**CE** = clean equipment  
**T** = training of food handlers  
**TF** = taste food  
**CGI** = check goods in  
**MCCP** = monitor CCP's  
**SR** = stock rotation  
**VI** = visual inspection  
**I** = providing information  
**E** = experience  
**DK** = don't know

**53. Level of full compliance with hazard analysis / HACCP based food safety management systems**

<b>Risk Rating</b>	<b>Compliance</b>	<b>Non Compliance</b>
<b>A</b>	0 (0 %)	34 (100%)
<b>B</b>	4 (7%)	165 (93%)
<b>C</b>	0 (0%)	309 (100%)

**54. Presence of hazard analysis / HACCP documentation**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>Partial</b>
<b>A</b>	2 (6%)	29 (85%)	3 (9%)
<b>B</b>	35 (21%)	91 (54%)	43 (25%)
<b>C</b>	60 (19%)	107 (35%)	142 (46%)

**55. Analysis NO / Implementation NO**

<b>Risk Rating</b>	<b>Number of Businesses</b>
<b>A</b>	18 (53%)
<b>B</b>	70 (41%)
<b>C</b>	61 (20%)

**56. Analysis YES / Implementation NO**

<b>Risk Rating</b>	<b>Number of Businesses</b>
<b>A</b>	3 (9%)
<b>B</b>	18 (11%)
<b>C</b>	19 (6%)

**57. Analysis NO / Implementation YES**

<b>Risk Rating</b>	<b>Number of Businesses</b>
<b>A</b>	11 (33%)
<b>B</b>	74 (44%)
<b>C</b>	210 (68%)

**58. Analysis YES / Implementation YES**

<b>Risk Rating</b>	<b>Number of Businesses</b>
<b>A</b>	2 (5%)
<b>B</b>	7 (4%)
<b>C</b>	19 (6%)

**59. Awareness of the term hazard analysis / HACCP**

<b>Risk Rating</b>	<b>Aware</b>	<b>Not Aware</b>
<b>A</b>	16 (47%)	18 (53%)
<b>B</b>	77 (46%)	92 (54%)
<b>C</b>	203 (66%)	106 (34%)

**60. Defining the meaning of the term hazard analysis / HACCP**

<b>Risk Rating</b>	<b>Correct</b>	<b>Incorrect</b>	<b>Partially Correct</b>	<b>Don't Know</b>
<b>A</b>	3 (9%)	5 (15%)	10 (29%)	16 (47%)
<b>B</b>	4 (2%)	21 (12%)	59 (35%)	85 (51%)
<b>C</b>	20 (6%)	47 (15%)	111 (36%)	131 (43%)

**61. Number of food business operators / managers who stated that the implementation of hazard analysis / HACCP within their food business was a legal obligation**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>Don't Know</b>
<b>A</b>	10 (29%)	3 (9%)	21 (62%)
<b>B</b>	130 (77%)	36 (21%)	3 (2%)
<b>C</b>	251 (81%)	50 (16%)	8 (3%)

**62. Number of food business operators / managers who stated they operated a hazard analysis / HACCP system within their food business**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>Don't Know</b>
<b>A</b>	14 (41%)	1 (3%)	19 (56%)
<b>B</b>	80 (47%)	4 (2%)	85 (51%)
<b>C</b>	167 (54%)	12 (4%)	130 (42%)

**63. Sources of training in HACCP based food safety management systems**

<b>Risk Rating of Food Business</b>	<b>Total Number in Population</b>	<b>Source of Hazard Analysis / HACCP Training Level II</b>	<b>% of FBO / Management Reps</b>
<b>A</b>	11 (32%)	7	64
<b>B</b>	53 (31%)	6	11
<b>C</b>	118 (38%)	20	17

**64. Sources of food hygiene / food safety information**

<b>Risk Rating</b>	<b>Level II</b>	<b>Level 3 or &gt;</b>	<b>Food Standards Agency</b>	<b>Local Authority</b>	<b>Combined %</b>
<b>A</b>	16 (47%)	0 (0%)	4 (12%)	4 (12%)	24 %
<b>B</b>	72 (43%)	11 (7%)	5 (3%)	20 (12%)	15%
<b>C</b>	107 (35%)	5 (2%)	58 (19%)	42 (14%)	33%

## Constraint Identification in Non-Compliant Food Businesses

### 65. Terminology

Risk Rating	Yes	No	Don't Know
A	10 (31%)	2 (6%)	20 (63%)
B	115 (77%)	17 (11%)	17 (12%)
C	202 (72%)	61 (22%)	16 (6%)

### 66. Finance

Risk Rating	Yes	No	Don't Know
A	4 (13%)	11 (34%)	17 (53%)
B	21 (14%)	82 (55%)	46 (31%)
C	55 (20%)	168 (60%)	56 (20%)

### 67. Obtaining training

Risk Rating	Yes	No	Don't Know
A	7 (22%)	11 (34%)	14 (44%)
B	98 (66%)	37 (25%)	14 (9%)
C	165 (59%)	98 (35%)	16 (6%)

### 68. Lack of useful information

Risk Rating	Yes	No	Don't Know
A	14 (44%)	6 (19%)	12 (37%)
B	112 (75%)	22 (15%)	15 (10%)
C	194 (70%)	74 (27%)	11 (4%)

### 69. Lack of practical guidance

Risk Rating	Yes	No	Don't Know
A	16 (50%)	5 (16%)	11 (34%)
B	120 (81%)	18 (12%)	11 (7%)
C	200 (72%)	66 (24%)	13 (4%)

### 70. Inadequate knowledge and technical expertise

Risk Rating	Yes	No	Don't Know
A	15 (47%)	5 (16%)	12 (37%)
B	74 (50%)	56 (38%)	19 (12 %)
C	113 (41%)	125 (45%)	41 (14%)

**71. More pressing business priorities**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>Don't Know</b>
<b>A</b>	5 (16%)	10 (31%)	17 (53%)
<b>B</b>	23 (15%)	90 (60%)	36 (24%)
<b>C</b>	49 (18%)	182 (65%)	48 (17%)

**72. Staff turnover**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>Don't Know</b>
<b>A</b>	6 (19%)	22 (69%)	4 (13%)
<b>B</b>	30 (20%)	111 (74%)	8 (5%)
<b>C</b>	46 (16%)	221 (79%)	12 (4%)

**73. Feelings that hazard analysis / HACCP was a waste of time**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>Don't Know</b>
<b>A</b>	1 (3%)	14 (44%)	17 (53%)
<b>B</b>	9 (6%)	87 (58%)	53 (36%)
<b>C</b>	19 (5%)	183 (66%)	77 (28%)

**74. Inadequate assistance from food safety enforcement officers**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>Don't Know</b>
<b>A</b>	8 (25%)	5 (16%)	19 (59%)
<b>B</b>	19 (13%)	63 (42%)	67 (45%)
<b>C</b>	31 (11%)	155 (56%)	93 (33%)

**75. Time taken implementing hazard analysis / HACCP**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>Don't Know</b>
<b>A</b>	9 (28%)	7 (22%)	16 (50%)
<b>B</b>	43 (29%)	61 (41%)	45 (30%)
<b>C</b>	82 (29%)	145 (52%)	52 (19%)

**76. Other difficulties (not included above)**

<b>Risk Rating</b>	<b>Yes</b>	<b>No</b>	<b>Don't Know</b>
<b>A</b>	0 (0%)	19 (59%)	13 (41%)
<b>B</b>	1 (3%)	108 (72%)	40 (27%)
<b>C</b>	8 (3%)	234 (84%)	37 (13 %)

## Primary Data from Entire Populations

### 77. Avoidance of enforcement action

Risk Rating	Yes	No	Don't Know
A	4 (12%)	13 (38%)	17 (50%)
B	3 (2%)	107 (63%)	59 (35%)
C	1 (0%)	238 (77%)	70 (23%)

### 78. A method of producing safe food

Risk Rating	Yes	No	Don't Know
A	6 (18 %)	11 (32 %)	17 (50%)
B	42 (25%)	67 (40%)	60 (36%)
C	88 (28%)	152 (49%)	69 (22%)

### 79. Avoidance of enforcement action and to produce of safe food

Risk Rating	Yes	No	Don't Know
A	7 (21%)	10 (29%)	17 (50%)
B	65 (38%)	44 (26%)	60 (35%)
C	150 (49%)	88 (29%)	71 (22%)

### 80. Do you think that the food safety officer should have provided you with more assistance in the implementation of hazard analysis / HACCP system within your food business

Risk Rating	Yes	No	Don't Know
A	13 (38%)	6 (18%)	15 (44%)
B	77 (46%)	23 (14%)	69 (40%)
C	155 (50%)	47 (15%)	107 (35%)

### 81. Willingness of food business operator to allocate additional financial resources to implement or improve the hazard analysis / HACCP system within your food business

Risk Rating	Yes	No	Don't Know
A	15 (44%)	2 (6%)	17 (50%)
B	94 (56%)	34 (20%)	41 (24%)
C	162 (52%)	91 (29%)	56 (18%)

## 82. Invitation letter to FBOs for involvement in research

Date: as post mark  
Our Reference: E&CP/SFBB/06  
Direct Phone Number: 020 7974 6920  
Fax Number: 020 7974 6940  
Contact: Peter Dawkins  
E-mail: peter.dawkins@camden.gov.uk

Please quote our reference in any correspondence

Dear Sir or Madam:

You may be aware that a new set of food hygiene regulations have come into force. These regulations require you as the Food Business Operator to operate a food safety management system known as hazard analysis. The purpose of hazard analysis is to assist you to produce safe food for your customers.

I am currently undertaking a research project in order to assess the level of understanding within food businesses within the borough. I would greatly appreciate your assistance in identifying the common problems encountered by food business operators when implementing and operating a hazard analysis system. With your help the Food Team will be able to provide additional support and assistance to food business operators comply with this legal obligation.

If you agree to participate in this research you or your management representative will be interviewed and your food business will subject to an inspection. Both the interview and inspection will be at a mutually agreed date and time. ***Please note that this is not a formal food hygiene inspection and you are not obliged to take part in the research.*** Any information you provide will only be used as part of the research and for no other purpose.

I will shortly be contacting you by telephone to seek your permission to be included in the research.

Your cooperation in this research would be greatly appreciated and will benefit yourself and other food business operators in complying with your legal obligations.

Yours faithfully

Peter Dawkins Food Safety Team

### 83. Hazard Analysis Questionnaire

#### **HAZARD ANALYSIS QUESTIONNAIRE**

**About your Business:**

**Date :**

**Name**

.....

**Business Address**

.....

.....

**Contact Tel** .....

1. Main Activity of business.....

2. When was your food business established?

.....

3. FBO / Manager's Experience in catering/ food industry No. of Years:-

Where:-

4. What food safety legislation applies to your food business ?

A. Correct **Y/ N**

B. Incorrect **Y/ N**

C. Partially Correct **Y / N**

D. **Don't know**

#### **Reg 4 (3) (a)**

5 Think about the food that is delivered to, stored, prepared or displayed in your food business. What things could contaminate this food and harm your customers if this food was eaten ?

Hazards Identified:

A. Microbiological **Y / N**

B. Chemical Y / N

C. Physical Y / N

**Reg 4 (3) (b)**

6. Of the things you have just mentioned (**name them in turn**), where exactly in your food operations could these contaminants enter the food ?

A. Correct Y / N/ Partial/ Don't know

Examples Given .....

.....

.....

.....

**Reg 4 (3) ( c )**

7. Think about the food that is delivered to, stored, prepared or displayed in your food business.

**What are the activities that you or your staff undertake, which if not carried out correctly, could harm the food provided to your customers ?**

A. Correct Y / N/ Partial / Don't know

Examples Given.....

.....

.....

.....

**Reg 4 (3) (d)**

8. What actions do you or your staff take to ensure that your food is safe to eat ?

A. Correct Y / N/ Partial / Don't know

Examples Given.....

.....  
.....  
.....

**Reg 4 (3) (e)**

9. How do you know that if these actions are actually working ?

A. Correct

**Y / N/ Partial / Don't know**

Examples Given.....

.....  
.....

10. Have you ever heard of the term hazard analysis or HACCP ? **Y / N**

If YES

Where did you receive this information?

.....  
.....  
.....  
.....

11 What is the meaning of the term hazard analysis / HACCP / HACCP based Systems ?

Correct

**Y / N/ Partial / Don't know**

Examples Given .....

.....

.....  
.....

12. Do you have access to information on food safety / hygiene issues ?

**Y N Don't know**

Examples Given.....

.....

13. Is there a legal requirement for the food business operator of a food business to implement a hazard analysis system / HACCP based system of the activities involving food products within his / her food business?

**Y N Don't know**

14. Have you ever received any form of hazard analysis / HACCP training?

**Y N Don't know**

If Yes

a. Where did you receive your training?

.....

15. In your opinion do you operate a hazard analysis / HACCP based system within your own food business?

**Y N Don't know**

**For Premises Operating a Hazard Analysis System**

16. Did you have any general problems in implementing your food safety hazard analysis / HACCP system?

**Y N Don't know**

17. What were these problems?

.....

.....

.....

18. Did you experience any specific difficulties when  
implementing your Hazard Analysis System / HACCP?

<b>Y</b>	<b>N</b>	<b>Don't know</b>
----------	----------	-------------------

**If Yes**

Did you experience difficulties in any of the following areas :

a. Terminology used in hazard analysis / HACCP

<b>Y</b>	<b>N</b>	<b>Don't know</b>
----------	----------	-------------------

b. Finance involved in implementing hazard analysis/ HACCP

<b>Y</b>	<b>N</b>	<b>Don't know</b>
----------	----------	-------------------

c. Obtaining appropriate hazard analysis / HACCP training

<b>Y</b>	<b>N</b>	<b>Don't know</b>
----------	----------	-------------------

d. Lack of useful information regarding hazard analysis / HACCP

<b>Y</b>	<b>N</b>	<b>Don't know</b>
----------	----------	-------------------

e. More pressing non business priorities

<b>Y</b>	<b>N</b>	<b>Don't know</b>
----------	----------	-------------------

f. Lack of practical guidance regarding hazard analysis /HACCP

<b>Y</b>	<b>N</b>	<b>Don't know</b>
----------	----------	-------------------

g. Inadequate knowledge regarding hazard analysis / HACCP

<b>Y</b>	<b>N</b>	<b>Don't know</b>
----------	----------	-------------------

h. Staff turnover

<b>Y</b>	<b>N</b>	<b>Don't know</b>
----------	----------	-------------------

i. Feelings that hazard analysis / HACCP was a waste of time

<b>Y</b>	<b>N</b>	<b>Don't know</b>
----------	----------	-------------------

j. Inadequate assistance from the Food Safety Enforcement Officers in relation to your HACCP / Hazard analysis System

**Y    N    Don't know**

k. Other (State)

**Y    N    Don't Know**

**If No**

**PROVIDE A SIMPLE DEFINITION OF HAZARD ANALYSIS**

**"This is where you identify the things that might be harmful in relation to the safety of food and introduce adequate controls to ensure the food is safe and check those controls to make sure they are working "**

19. Are you experiencing difficulties either singly or combined with any of the following?

a. Terminology used in hazard analysis / HACCP

**Y    N    Don't know**

b. Finance involved in implementing hazard analysis/ HACCP

**Y    N    Don't know**

c. Obtaining appropriate hazard analysis / HACCP training

**Y    N    Don't know**

d. Lack of useful information regarding hazard analysis / HACCP

e. More pressing non-business priorities

**Y    N    Don't know**

f. Lack of practical guidance regarding hazard analysis / HACCP

**Y    N    Don't know**

g. Inadequate knowledge regarding hazard analysis / HACCP

**Y    N    Don't know**

- h. Staff turnover
- Y   N   Don't know**
- i. Feelings that hazard analysis / HACCP was a waste of time
- Y   N   Don't know**
- j. Inadequate assistance from the Food Safety Enforcement
- Y   N   Don't know**
- k. Officers in relation to your HACCP / Hazard analysis system
- Y   N   Don't know**
- k. Other (State)
- Y   N   Don't know**
20. What is the main reason that you would operate a HACCP / Hazard analysis system
1. avoidance of enforcement action ?
- Y   N   Don't know**
2. as a method of producing safe food ?
- Y   N   Don't know**
3. to both avoid enforcement action and to produce safe food ?
- Y   N   Don't know**
4. any other reason ?
- Y   N   Don't know**
- State.....

## 84. Food Premises Inspection Form

Date:

### **1. DETAILS OF PREMISES**

Premises Risk Rating:

1. Name of premises

Address: -

Name of Proprietor:-

Name of Manager:-

Contact Telephone No

Language of Effective Communication:

### **2. Ethnic Origin of Proprietor/ Food Business Operator**

White UK	Black African	Indian	Greek/Cypriot
White Irish	Black Caribbean	Pakistani	Turkish/ Cypriot
White Other	Black Other	Bangladeshi	Chinese
Asian other	Any other	Company Ownership	

### **3. FOOD HYGIENE TRAINING DETAILS**

Year

3.1 F B O //Manager's Qualifications:- BFHC or equivalent **Yes / No**  
.....

3.2 Other State ..... **Yes / No**  
.

3.3 Food Handlers: ( Excluding Manager) Number with BFHC, or equivalent  
.....

3.4 Food Handlers: Numbers with no formal FH qualifications .....

3.5 Were untrained food handlers supervised by a competent person ? **Y/ N /NA**

#### **4. PREMISES STRUCTURE**

- |     |   |                 |
|-----|---|-----------------|
| 4.1 | Generally Clean / Dirty                                   | <b>C / D</b>    |
| 4.2 | External structure generally suitable and in good repair? | <b>Yes / No</b> |
| 4.3 | Suitability of the internal structure of food rooms ?     | <b>Yes / No</b> |

#### **5. LAYOUT**

- |     |  |                 |
|-----|--|-----------------|
| 5.1 | Is design / layout suitable to activities carried out? | <b>Yes / No</b> |
| 5.2 | Inadequate space for hygienic food preparation?        | <b>Yes / No</b> |

#### **6.FACILITIES**

- |     |  |                 |
|-----|--|-----------------|
| 6.1 | WHB with hot & cold water & hygienic hand drying facilities available in / near food rooms | <b>Yes / No</b> |
| 6.2 | Are Food Preparation Surfaces Adequate   | <b>Yes / No</b> |

#### **7.EQUIPMENT**

- |     |                                     |                     |
|-----|-------------------------------------|---------------------|
| 7.1 | Chopping Boards                     | <b>Yes / No</b>     |
| 7.2 | In hygienic state?                  | <b>Yes / No/ NA</b> |
| 7.3 | Correctly used by food handlers?    | <b>Yes / No/ NA</b> |
| 7.4 | Utensils for food preparation use ? | <b>C / D /NA</b>    |

#### **8. PERSONAL HYGIENE**

- |     |  |                 |
|-----|--|-----------------|
| 8.1 | Adequate personal hygiene of food handlers   | <b>Yes / No</b> |
| 8.2 | Arrangements for reporting sickness and excluding food handlers with food poisoning symptoms | <b>Yes / No</b> |

## **9. CLEANING SCHEDULE**

- |     |   |                      |
|-----|---|----------------------|
| 9.1 | Is there a written cleaning schedule for food rooms?  | <b>Yes / No/ NA</b>  |
| 9.2 | If Yes, is the schedule implemented?  | <b>Yes / No / NA</b> |
|     | Where no written cleaning schedule exist, were the premises in a hygienic state with regard to: |                      |
| 9.3 | Equipment ?   | <b>Yes / No / NA</b> |
| 9.4 | Utensils ?  | <b>Yes / No/ NA</b>  |
| 9.5 | Do staff understand their cleaning responsibilities?  | <b>Yes / No</b>      |
| 9.6 | Are sanitisers used for cleaning / disinfection of food equipment / food contact surfaces       | <b>Yes / No</b>      |

## **10. PEST CONTROL**

- |      |  |                        |
|------|--|------------------------|
| 10.1 | Was there evidence of infestations by pests ?  | <b>Yes / No</b>        |
| 10.2 | If Yes,? is a pest control programme in operation with records available for inspection? | <b>Yes /<br/>No/NA</b> |

## **11. HACCP IMPLEMENTATION ASSESSMENT**

**Which of the following mal-practices were occurring at time of inspection or were likely to due to ensuing conditions?**

**Cross-contamination or likely cc from the following unhygienic personal food handling practices:-**

Food handlers not washing hands after handling raw food / before handling ready to eat foods ? **Y/ N /NA**

**Cross- contamination or likely cc from any of the following during chill storage:-**

Raw food stored above or in contact with cooked & ready to eat food ? **Y/ N /NA**

One or more chill fridges operating above 8 C ? **Y/ N /NA**

Chilled display unit operating above 8 C ? **Y/ N /NA**

Any temperature monitoring records kept ? **Y/ N /NA**

**Cross-contamination or likely cc from use of dirty preparation surfaces or equipment;**

Use of same preparation surface or chopping/ cutting boards without effective cleaning / disinfecting in between uses ? **Y / N /NA**

**Cross- contamination or likely cc from cooking practices:-**

Evidence of food being adequately cooked/ reheated to 75C or above at centre? **Y / N /NA**

Food probed by a thermometer to monitor core temperatures? **Y / N /NA**

Records kept for hot foods? **Y / N**

**Storage / processing of high – risk cooked and ready to eat high risk food.**

High-risk food stored at ambient temperature? **Y / N**

Hot held high risk food maintained at a minimum temperature of 63 Celsius  
Temperature records kept ? **Y / N /NA**

**Cross - contamination or likely cc from cleaning practices**

Are dirty sponges, cloths and other materials used in the cleaning food equipment or food contact surfaces? **Y / N**

**HACCP / Hazard Analysis System**

Was there a documented HACCP / Hazard Analysis System in operation ? **Y / N /P**

**Reg 4 (3) Current Compliance Situation**

ANALYSIS	NO	IMPLEMENTATION	NO
ANALYSIS	YES	IMPLEMENTATION	NO
ANALYSIS	NO	IMPLEMENTATION	YES
ANALYSIS	YES	IMPLEMENTATION	YES

## 85. Invitation Letter to FBOs - Coaching Session

**Date:** as post mark  
**Our Reference:** E&CP/SFBB/06  
**Direct Phone Number:** 020 7974 6920  
**Fax Number:** 020 7974 6940  
**Contact:** Peter Dawkins  
**E-mail:** peter.dawkins@camden.gov.uk

**Consumer  
Protection**

**Environmental Health Team**

London Borough of Camden

Town Hall

Argyle Street

London WC1H 8EQ

*Please quote our reference in any correspondence*

Dear Sir or Madam:

### **Food Safety Act 1990**

Your food business has been identified as not meeting the requirements of the above legislation in terms of not having an effective food safety management system in place.

In order for you to meet your legal obligations you are invited to attend a free training session where you will be informed of the new requirements and provided with support and information, including the documentation you will need which you can use to help you comply.

You are strongly advised to attend this session, as food businesses that do not comply with these new legal requirements may be subject to enforcement action, including prosecution. It is therefore clearly in your interest to attend. If you do not attend we will assume that you are already implementing such a food safety management system.

Unfortunately due to the expected high demand for this course it will not be possible for any dates to be changed. If you are unable to attend this session, you need to ensure that you send a management representative on your behalf.

You are invited to attend on: **Date:** **Time:**  
**At:** Camden Town Hall, Judd Street, London, WC1H 9JE, 4

The course will be taught in English. Therefore if English is not your first language you are welcome to bring a person who can act as your translator.

To confirm that you will be attending, please complete the enclosed slip and return it in the pre-paid envelope.

**Please be advised that the course will start promptly and that you should arrive at the venue 10 minutes before the stated time.**

If you have any queries then please contact Peter Dawkins on 0207 974 2406.

We look forward to seeing you soon.

Yours faithfully  
**Operations Manager Food Safety Team**

## **86. The Paper based exercises used in the Intervention Project Sessions**

### **Exercise 1**

#### **Question**

A customer has made a complaint to the Environmental Health Department that the top of a trifle you had prepared and sold on your premises had what he believed to be drops of blood on its surface.

A Food Safety Officer arrives at your premises to investigate.

If you were operating a food safety management system what steps would you have taken to prevent this alleged contamination and what would you need to show the inspector to demonstrate that you were operating such a system?

#### **Answer**

1. FBO to obtain date and time and date of purchase.
2. FBO to investigate method of storage / preparation.
3. FBO to assess food handler training and supervision re X contamination.
4. Effective controls in place
  - Effective separation of RTE & raw foods
  - Separate refrigerators for RTE & raw foods
  - Reporting concerns to FBO / supervisor
  - Effective separation if single refrigerator used
  - Separate food preparation areas for RTE & raw foods
  - Improve food handler training re X contamination, if necessary and amend training records.
  - Assess level of staff supervision

### **Exercise 2**

#### **Question**

A customer claims to have seen a mouse running across the floor of your food premises and has reported this to the Environmental Health Department.

A Food Safety Officer arrives at your premises to investigate.

If you were operating a food safety management system how would you demonstrate that your food business are adequately controlling pests?

#### **Answer**

1. FBO to demonstrate effective pest proofing of food rooms.
2. Good standard of housekeeping to remove harbourage opportunities and to remove food sources.
3. Open foods kept in lidded containers
4. Lidded waste receptacles
5. Appropriate documentation

- Cleaning schedules (up to date and signed by supervisor / FBO)
- 6. Pest control contract in place and recommendations implemented
- 7. Staff training
  - monitoring for signs of pest activity
  - reporting pest activity to supervisor
  - cleaning / housekeeping/ refuse disposal
  - improve training if necessary and amend staff training records.

### **Exercise 3**

#### **Question**

A customer returns a sandwich, which was prepared in and sold from your food premise that contains what appears to be a small piece of packaging material. You pay her a refund and she informs you that she has reported the matter to the Environmental Health Department

If you were operating a food safety management system how would investigate this matter and prevent a recurrence?

#### **Answer**

1. FBO to obtain date of purchase
2. FBO to attempt to identify the foreign object and identify source
3. Check standards of housekeeping in food rooms, especially in the food Preparation areas
  - focus on food preparation surfaces
4. Appropriate documentation
  - cleaning schedules (up to date and signed by supervisor / FBO)
5. Staff training
  - removal of sources of physical contamination
  - reporting concerns to FBO / supervisor
  - cleaning / housekeeping/ refuse disposal
  - improve training if necessary and amend staff training records.
6. Assess level of staff supervision

### **Exercise 4**

#### **Question**

A customer claims to have eaten a cooked chicken dish which was undercooked and resulting in food poisoning. He informs you that he had reported the incident to the Environmental Health Department and he intends to sue you for damages.

If you were operating a food safety management system what steps would you take to investigate this allegation to prevent a recurrence?

## **Answer**

1. FBO to obtain date of purchase, supplier details
2. FBO to investigate the method used to prepare the food
  - cold holding and cooking core temperatures
  - potential areas of cross contamination – delivery, storage, preparation, cooking and hot holding.
  - focus on food contact surfaces
3. Appropriate documentation
  - cleaning schedules for food contact surfaces ( up to date and signed by supervisor / FBO)
  - temperature monitoring records for delivery, storage, cooking and hot holding
4. Staff training
  - cleaning / disinfection of food contact surfaces
  - improve training if necessary and amend staff training records.
5. Assess level of staff supervision

**87. Monitoring forms issued during coaching sessions**

MANAGERS DAILY CHECK LIST  
MANAGERS CHECK SHEET

REFRIGERATOR/FREEZER TEMPERATURE LOG SHEET

COOKING AND RE-HEATING TEMPERATURE LOG

COOLING FOOD LOG SHEET

HOT HOLDING TEMPERATURE RECORD

DAILY / WEEKLY/ MONTHLY CLEANING SCHEDULE

FOOD HANDLER TRAINING LOG/ RECORD

## 88. Food Safety Management System for

..... (name of food business)

The person responsible for food safety matters is

.....

When they are away the necessary checks are carried out by

.....

**The following good practices are followed on the days the business operates.**

**Training: Food handlers are trained in safe food handling practices.**

All food handlers are trained in safe food handling practices and are properly supervised.

A written record signed by each food handler confirming that they have been adequately trained and have read and understood this document is kept on site. (Training can be delivered in house and/or by an external provider to a recognised level). Food handlers are supervised and will undergo refresher training when their food safety knowledge requires updating.

### **Cold Storage: Fridge / Freezer temperatures**

Chilled and frozen food purchases for the business are transported and placed in either the fridge or freezer within 15 minutes of purchase / delivery.

The temperature of the refrigerator/s is checked at the beginning of each day, when it contains food, to ensure it stores food at 8°C or below. If it is not storing food at the correct temperature, corrective action is taken and any food, which has been stored above 8°C for more than 4 hours, will be thrown away.

The temperature of the freezer is checked to ensure it is storing food at -18°C or colder the beginning of each working day. If it is discovered that food has defrosted, the Environmental Health Department will be contacted for advice on

what should be done with the food and the necessary steps will be taken to ensure the freezer is repaired or replaced.

### **Cooking: Food is thoroughly cooked and we check before serving.**

All food cooked on the premises will be thoroughly cooked and temperature probed to ensure a core temperature of 75°C is achieved. Where food had been identified as not being cooked thoroughly, it is returned for further cooking until it satisfies the check(s) outlined above.

If there is found to be a fault with the cooking process, practices will be changed to ensure thorough cooking of the food.

### **Personal Hygiene: Cleanliness & other risks of contamination.**

All food handlers wash their hands thoroughly and regularly to ensure they are clean before handling any food. They also wear clean aprons/over-clothing when handling food and do not wear jewellery. Staff with long hair always ensure it is tied back and if necessary covered.

### **Staff Fitness to Work: Illness and risk of illness.**

All food handlers know they must notify their manager if they are suffering from sickness, diarrhoea, septic wounds and cuts. They are also to notify the person currently in charge about any sickness / food poisoning symptoms any close family members or contacts have suffered.

Food handlers are not allowed to return to food handling work until they have been symptom free for 48 hours.

All food handlers are also notified that they must cover all cuts with a waterproof dressing before handling food.

## **Cleaning: Clean and Disinfect.**

All food contact surfaces and hand contact surfaces are cleaned and disinfected prior to use each day. The food safe disinfectant we use is

.....

This product is used in accordance with the manufacturer's instructions. Food handlers use the clean as you go method. Any spillages of food that may cause cross contamination are cleaned up immediately with the use of the food safe disinfectant. All staff have been trained to know what cleaning they must do to prevent cross contamination.

## **Safe Food Storage: Labeling, dates and preventing cross contamination.**

All food is stored to prevent risk of contamination.

Food handlers ensure:

1. raw meat is stored separately or below cooked and ready to eat foods;
2. all open food is kept covered.

Foods with **Use-by dates** are checked daily. We never display food with an expired use-by date. Such food is clearly marked as being for return or disposal.

## **Pest control**

Regular routine checks are carried out to make sure there are no pests/signs of pests present in food rooms and to ensure that food is not contaminated. If pests are found we immediately contact our own pest control contractor or the Environmental Health Department for advice.

Any recommendations made by pest control contractor or the Environmental Health Department in relation to pest proofing and control will be implemented.

## **Allergies:**

When a customer informs us that they have a specific food allergy, we will make all reasonable checks that the food they are given does not contain the food they are allergic to (known as an allergen). We will check all the ingredients in a dish.

Where we cannot be certain that the allergen is not present in a food item, we will make it clear to the customer that this is the case. When we produce menus, we will make it as clear as possible what food is included in a dish.

When we are asked to prepare food free of a particular allergen we make sure that all work surfaces and equipment have been thoroughly cleaned before starting work to prevent cross contamination.

We keep a list of the ingredients used in all ready meals we use.

**WHEN ANY PROBLEMS ARE DISCOVERED REGARDING THE MATTERS IN THIS DOCUMENT A NOTE OF ANY CORRECTIVE ACTION IS MADE IN OUR DIARY (see attached)**

Signed..... (Food Business Operator)

Date.....

### **\*Note to Food Business Operator.**

The Council's Food Safety Officers will request this information as part of the food hygiene inspection of your food business.

Your food safety management system will need to be reviewed from time to time to check that it is still relevant and that all controls are in place. It is also your responsibility to ensure that it is amended to take into account any food preparation operations not covered by the document to ensure the food you provide is safe.

If you require any further information please contact the Food Team.

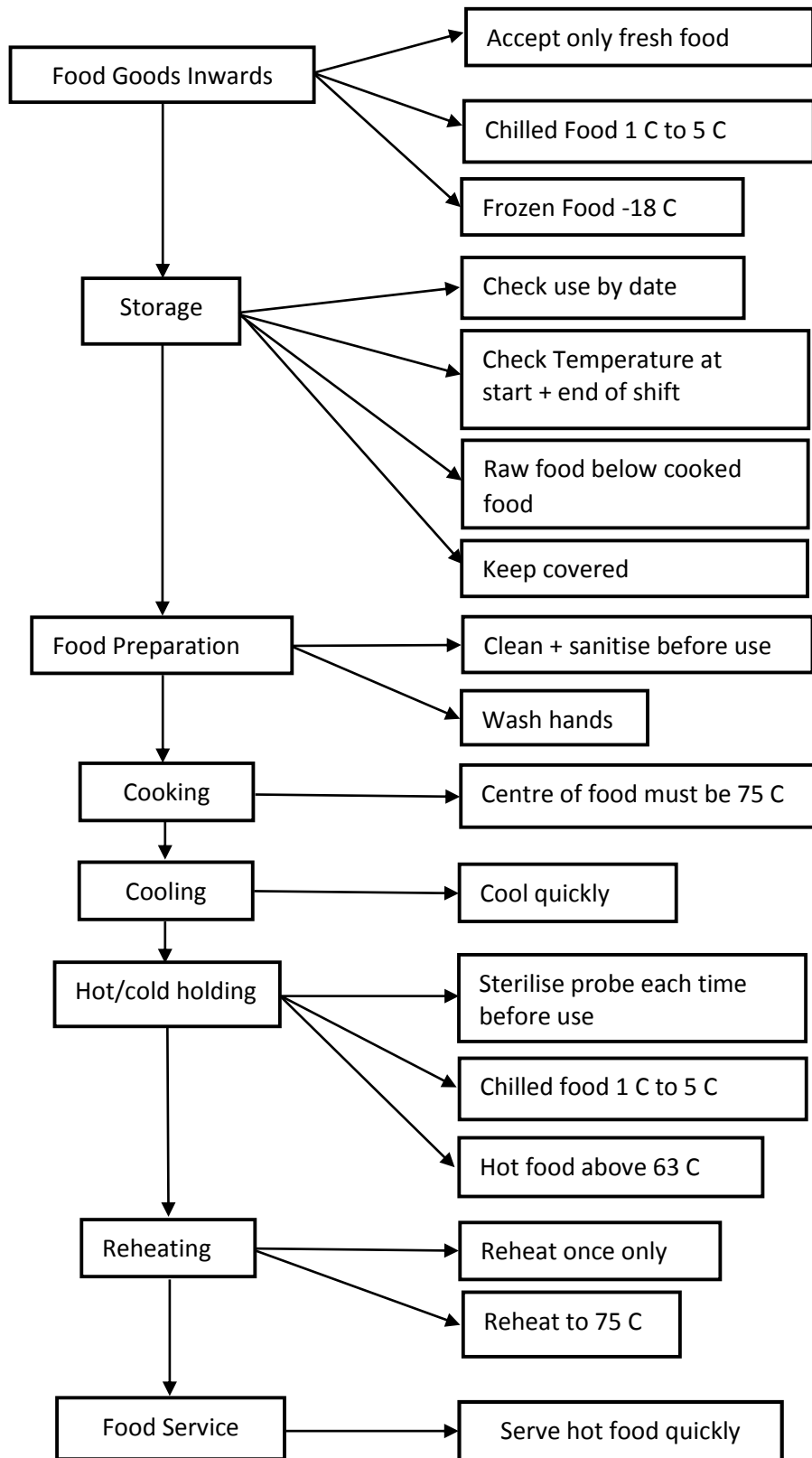
***Please note failure to operate a food safety management system is a criminal offence which may result in legal action and that the absence of such a system will adversely affect your Food Hygiene Rating Score and your customer's confidence in your food business.***

## Diary of any actions taken

Date	Problem/ Corrective Action Taken	Signed

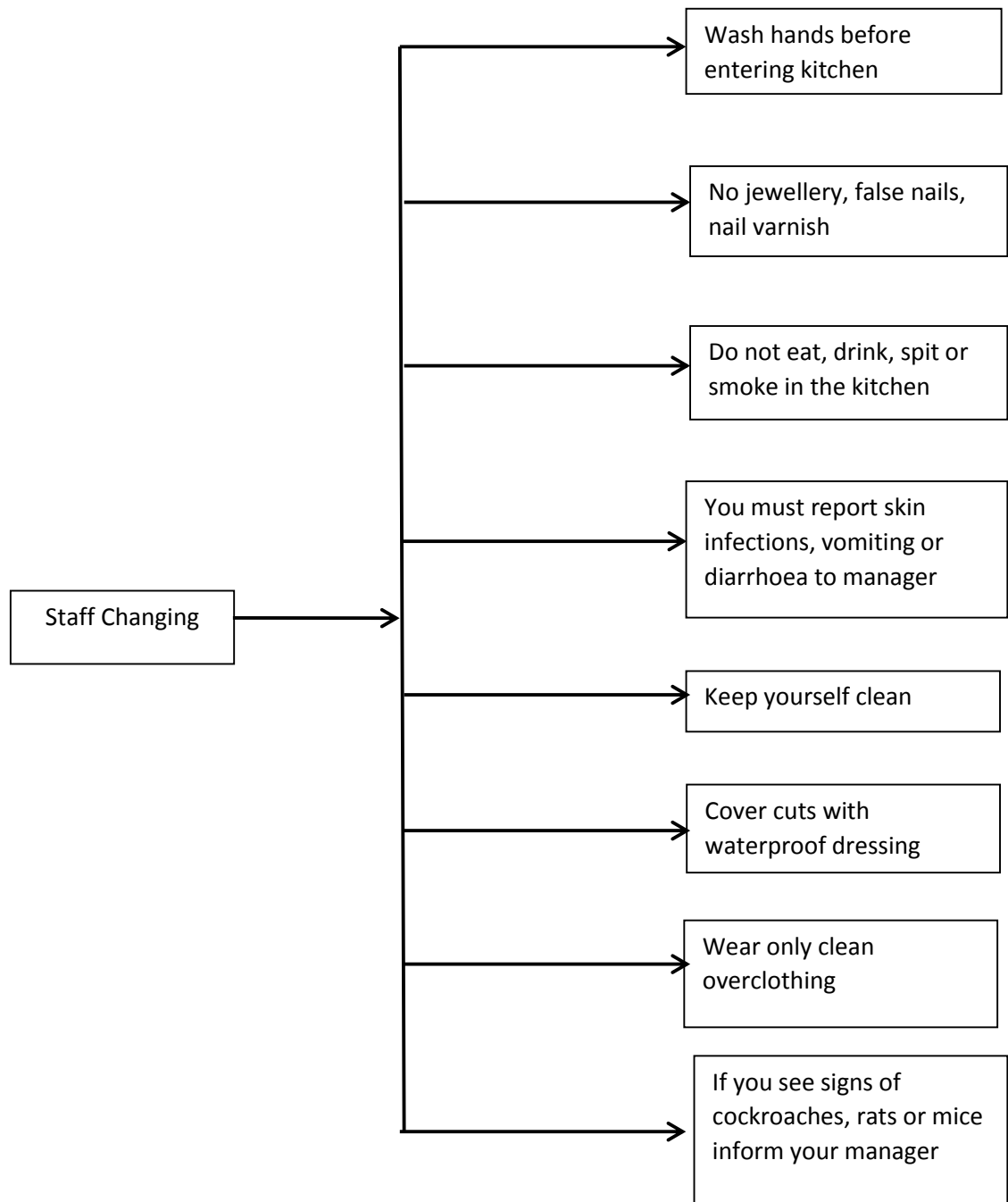
## 89. Food Preparation Stages

## Signage Prompts



## Area

## Signage Prompts



## 90. Results of Intervention Project (Participating Food Businesses)

<b>Risk Rating Score</b>	<b>No of Food Businesses</b>	<b>% of Food Businesses</b>
<b>Decrease</b>	<b>70</b>	<b>89.8</b>
<b>Increase</b>	<b>3</b>	<b>3.8</b>
<b>No Change</b>	<b>5</b>	<b>6.4</b>

## 91. Results of Intervention Project (Participating Food Businesses)

<b>Risk Rating Category</b>	<b>No of Food Businesses</b>	<b>% of Food Businesses</b>
<b>Lower</b>	<b>66</b>	<b>84.6</b>
<b>Higher</b>	<b>1</b>	<b>1.3</b>
<b>No Change</b>	<b>11</b>	<b>14.1</b>

## LACOTS outcomes for A and B risk rated food businesses

### 92. Analysis NO / Implementation NO

<b>Risk Rating</b>	<b>Number of Businesses</b>
<b>A</b>	<b>18 (53%)</b>
<b>B</b>	<b>70 (41%)</b>

### 93. Analysis YES / Implementation NO

<b>Risk Rating</b>	<b>Number of Businesses</b>
<b>A</b>	<b>3 (9%)</b>
<b>B</b>	<b>18 (11%)</b>

**94. Analysis NO / Implementation YES**

<b>Risk Rating</b>	<b>Number of Businesses</b>
<b>A</b>	<b>11 (33%)</b>
<b>B</b>	<b>74 (44%)</b>

**95. Analysis YES / Implementation YES**

<b>Risk Rating</b>	<b>Number of Businesses</b>
<b>A</b>	<b>2 (5%)</b>
<b>B</b>	<b>7 (4%)</b>