



## Significance of official food control in food safety: Food business operators' perceptions

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### ABSTRACT

Finnish food business operators' (FBOs) opinions of the food control inspections performed by local authorities were evaluated, using a questionnaire. The production types of FBOs included were slaughterhouses, meat, fish and milk plants, egg-packing plants and storage facilities dealing with foods of animal origin. Based on a total of 459 responses, we noted that the impacts of official controls were considered valuable for food safety, since 78.8% of the respondents saw that the actions taken based on inspections had enhanced the safety of the products. The results also highlighted the importance of inspectors being familiar with the production processes to increase the efficacy of food control. More frequent visits by official inspectors correlated positively with FBOs' conceptions of noncompliances being relevant for food safety. The FBOs saw local inspectors as the most important sources of new information concerning food safety legislation and 89.1% of the respondents confirmed that discussions with local inspectors had helped them understand the food safety risks within their processes. We also noted that the bigger the FBO, the more clearly they seem to perceive the risks associated with their processes (Spearman's rank correlation coefficient  $r = 0.127$ ,  $P = 0.009$ ).

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### 1. Introduction

In the European Union, food control is based on regulations covering the food chain from farm to table. The regulation covering the hygiene of foodstuffs (EC No 852/2004) defines the obligations of food business operators (FBOs), stating that "Food business operators shall ensure that all stages of production, processing and distribution of food under their control satisfy the relevant hygiene requirements". The competent authority is responsible for carrying out official controls to verify FBOs' compliance with food safety requirements (EC No 854/2004). On the national level in Finland, the Food Act defines that the responsibility of the FBO is to confirm the safety of the products, using a self-checking system that is then audited by the authorities (Food Act 23/2006).

In Finland, the supervising authority in official food control is the Finnish Food Safety Authority Evira, but the responsibility for organizing and conducting food control at the local level lies in the

municipalities. Slaughterhouses have a full- or part-time inspector on site, working for the Evira, but the other facilities are completely under municipal control. Due to the autonomy of the municipalities, as safeguarded by the Finnish Constitution, local authorities may plan for and put into action the official food control independently, taking into account the legislative requirements. Regional agencies audit the local food control systems, but municipal independence may, however, lead to diverse ways of organizing, as well as resourcing the food control sector. Food control sector is in most cases headed by a veterinarian, and the inspections to the FBOs are conducted by either veterinarians or health inspectors, with more variable training on food safety issues. In Finland, 17–25% of the veterinary curriculum is composed of food control and environmental health education. Traditions in carrying out the official control may also vary among different local control units, e.g. how much focus is on giving instructions or discussing noncompliances with the FBO. The factors likely to reduce resources include the lack of knowledge of food control among municipal decision makers (Tähkää, Majjala, Hörman, Poutiainen-Lindfors, & Korkeala, 2008). Inadequate resourcing inevitably leads to strict prioritizing in targeting the inspection visits and less frequent inspection visits to certain food production establishments. This may have impact on the FBOs' opinions on the effect and benefits of food control.

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Official food control may be considered as one of the corner stones in producing safe food and promoting public health, but its efficacy is something that may not be taken as self-evident. Despite comprehensive steering by legislation, legislative demands are not necessarily implemented as such to the food production processes for several reasons, such as economic ones. Larger facilities consider systems related to food safety and quality as an effective investment, while the small firms perceive them as prohibitive burdens (Jayasinghe-Mudalige & Henson, 2007). There are also factors other than official control having impact on the level of food safety, such as the direct impact of the consumer. In the Canadian red meat- and poultry-processing sector, market-based incentives have a greater impact on food safety responsiveness than governmental regulatory actions (Jayasinghe-Mudalige & Henson, 2006).

No effective methods yet exist for evaluating the true impact of food control on food safety. Epidemiologic data on food-related illnesses may be applied for evaluating the impact of food safety control plans (ICMSF 2006), but since the majority of food poisonings are restaurant-derived epidemics (Gould et al., 2011), this method is not directly applicable at the level of food-processing plants. The attitudes of the FBOs towards food control and the FBO's perception of food safety issues may also have a significant impact on the realization of official food control, but the scientific data are yet lacking. Understanding the importance of corrective actions and the willingness to follow the instructions given by the official inspector could be considered as having a direct effect on the level of food hygiene. The aim of this study was to clarify the opinions of FBOs about food control to enhance the efficacy of food control practices.

## 2. Materials and methods

### 2.1. The questionnaire

A questionnaire to evaluate the FBO's attitudes towards food safety inspections was developed. The questionnaire contained Likert-scale questions, other multiple choice questions and open-ended questions. It was divided in four parts. The first part included questions on company revenue, type of production, location, number of employees and the respondent's position in the company. In the second part of the questionnaire, information on inspection frequencies, inspecting authorities and the respondent's views about the course and the conformity of the inspections was collected. The third part measured the respondent's opinions on the guidance given by the inspectors. In the last part, the respondent answered questions concerning the effects of the inspections in the particular facility. The questionnaire was issued to all 1276 establishments dealing with food of animal origin before the retail stage in 2006 in Finland. These included slaughterhouses, meat, fish and milk plants, storage facilities dealing with foods of animal origin, and egg-packing plants. The postal addresses of these companies were acquired from the Evira register of approved establishments. The inquiry was launched in February 2006, and a reminder was sent 3 weeks later.

### 2.2. Statistical analyses

Statistical analysis was performed, using SPSS 20.0 (IBM SPSS Software; IBM Corp., Armonk, NY, USA). In grouping the data by the size of the establishments, the European Commission Recommendation 2003/361/EC on the definition of micro-, small- and medium-sized enterprises was applied. In this a microenterprise is defined as one that employs fewer than 10 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 2 million, a small enterprise is one that employs fewer than 50

persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 10 million, and a medium-sized enterprise is one that employs fewer than 250 persons and whose annual turnover does not exceed EUR 50 million or whose annual balance sheet total does not exceed EUR 43 million (EC 361/2003). An FBO exceeding these numbers was defined as large.

The statistical test used to evaluate the correlation between different Likert-scale responses was Spearman's correlation, with two-tailed significance. Statistical significance was accepted with a probability value of 0.05 or less (confidence interval CI = 95%). In the analysis the 'don't know' answers were categorized as missing. Comparison between different groups was performed, using the Kruskal–Wallis test with 95% significance and the variables used in grouping were the size of the establishment and the type of the production.

## 3. Results

### 3.1. The respondents

Of the 1276 food establishments, 459 (36.0%) responded to the survey. Of the respondents, 28 represented more than one type of production. These 28 FBOs were handled as different establishments representing the various production types, so the total number of establishments in the analysis was 490. The types of plant most often represented in the sample were the fish plants (28.0%, 137/490), followed by the small-scale meat plants (18.2%, 89/490) (Table 1). Micro-sized establishments represented the majority of the respondents (57.6%, 282/490). The other establishment categories were small (22.2%, 109/490), medium (8.2%, 40/490) and large (3.3%, 16/490). The high number of micro- or small establishments reflects the overall distribution of Finnish enterprises, the percentage of these comprising 98.9% of all enterprises (OSF, 2006).

### 3.2. Role of the official inspections

Overall, the impact of official control was considered valuable for food safety, since 78.8% (308/391) of the respondents evaluated that the actions taken based on inspections had clearly or somewhat enhanced the safety of the products and 87.8% (387/441) believed that the actions had clearly or somewhat enhanced the overall hygiene of their plant (Table 2). The opinion that the local inspector is familiar with the principals of the production process was significantly correlated with the opinions that the operations following the official food control had enhanced the safety of the products ( $r = 0.337, P < 0.001$ ) and improved hygiene in production ( $r = 0.294, P < 0.001$ ). In the event the FBOs considered the inspector to be familiar with the process, they also commented that the inspector had clearly specified the noncompliances detected ( $r = 0.189, P < 0.005$ ). Of the respondents, 47.4% (231/487) stated

**Table 1**  
FBOs responding to the survey, grouped by the type of production.

Type of production	Number of respondents (%)
Slaughterhouses	21 (4.3)
Other EU-level meat plants	66 (13.5)
Small-scale slaughterhouses	39 (8.0)
Other small-scale meat plants	89 (18.2)
Fish plants	137 (28.0)
Milk plants	49 (10.0)
Egg-packing plants	44 (9.0)
Storage facilities for food	38 (7.8)
Not defined	7 (1.4)
Total	490 (100.0)

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