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# ROI OF FOOD SAFETY TRAINING IN CANADIAN FOOD COMPANIES

AN EXPLORATORY STUDY

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# Abstract

Safe Food Canada's mandate is to modernize the way in which people learn about food safety and food protection. We believe this to be the first study that looks specifically at investment by private sector food companies to support food safety training and education. The aim of this exploratory study is to better understand what is currently occurring in food safety training in Canada.

Food safety training and education has a number of payoffs. It motivates employees and fosters a corporate culture which prioritizes sound practices. Indeed, training and education play a crucial role in the achievement of an organization's goals by incorporating the interests of the company and its workforce. Little empirical research has been conducted on the private sector to date on food safety training and education and how it influences organizational financial performance.

The investigation looks at methods of delivery, content, expenditures, and organizational impact. It provides evidence of how confusing and vague food safety training metrics are when assessing program performance. Some limitations of the study are presented and the report highlights avenues for future research.

## Introduction

### **Statistics on foodborne diseases**

Foodborne diseases (FBD) not only significantly affect people's health, their harmful consequences are also reflected on the economy, business development, and on foreign trade (WHO, 2006; Sivaramalingam and others, 2015). Foodborne diseases cause about 48 million illnesses each year in the United States, of which about 9.4 million are caused by known pathogens (Scallan and others, 2011; Dewey-Mattia and others, 2013). The Government of Canada estimates that there are about 4 million cases of foodborne illness in Canada every year. The total estimate (specified pathogens and unspecified agents) for Canada is somewhat less than the U.S. estimate; approximately 1 in 8 Canadians compared to 1 in 6 Americans experience foodborne illness per year (Thomas and others, 2015).

### **Corporate cost of foodborne diseases**

The consequences of food safety events not only threaten consumers' health but also can cause lack of confidence to the associated companies. Another key consequence, is the significant financial impact of such events on the implicated firms. Outbreaks of foodborne illness results in substantial costs to individuals, the food industry, and the economy. Food safety professionals are aware that there are many benefits in food safety programs, but they have not been able to document the financial benefits and make a sufficiently strong business case for safety programs (Seo and others, 2013).

### **How foodborne diseases emerge**

Mainly, foodborne diseases are caused by mishandling, often due to inappropriate storage, pre-preparation, preparation, and distribution of meals by food handlers; (Medeiros and others, 2011). Therefore, FBD prevention requires understanding and application of appropriate handling practices at all steps throughout the supply chain. Food handler training and education is seen as one strategy where food safety can be improved, thus offering long-term benefits to the food industry. (Egan and others, 2007).



### **Fostering food safety**

As stated by the World Health Organization: “Food safety education is an essential tool to assure that workers do not contaminate food; it is also vital in eliminating or reducing food contaminants and preventing microorganism growth at levels causing disease” (WHO, 2001). Therefore, to achieve food safety, there is a need for enhancement of scientific and technical skills as well as development of efficient tools and training programmes (WHO, 2002). Regular training has a crucial role in decreasing food contamination risks by adjusting the practices of handlers and improving their awareness of risks. To maintain a food safety culture in an organization, the operators and staff must be trained and aware of the risks associated with the products or meals they are producing, know why managing the risks is important, and being able to effectively manage those risks in a demonstrable way (Medeiros et al, 2011; Powell and others, 2011).

### **Food safety training shapes employees**

Training and education has a crucial role in the achievement of an organizations goals by aligning the interests of organization and its workforce. Training of employees not only increases the efficiency and the effectiveness of those employees and the organization, it also enhances the capabilities of employees to assess risks and adjust practices.

*Although employee performance depends on many different factors such as job satisfaction, their own knowledge, and the management system, there is a demonstrated and substantial relationship between employee training and performance.*

Case studies have shown that employees who have been trained have both the skills and the competency to perform better (Ghafoor Khan and others, 2011). The challenge, as this study confirms, is identifying the financial payoff from such performance improvement.

### **Training quality standards**

Training design, content, and delivery all impact individual learning and organizational performance, and should be developed in accordance to the needs of the organization and its employees. In contrast, if the training design, the content, and/or delivery are not meeting these needs, the results will not be beneficial; in fact, without a training quality standard, it can cause a loss in time and money.

*There is a recognized need to develop training design and use methods that are proven to change behaviour as well as impart knowledge.*

Therefore, issues including course content, the site of training, duration of courses, and refresher training must be clearly defined, and well-designed in order to achieve the desired results (Egan and others, 2007; Ghafoor Khan and others, 2011).

### **Evaluating food safety training outcomes**

As important as training employees is for organizations, evaluation is a fundamental requirement for effective training and education. Evaluating the training process is necessary to understand the effectiveness of the content and methods used, check the achievement of the objectives set by both the trainer and trainee, and to understand whether the outcomes originally identified have been met (Egan and others, 2007). Organizations that use evaluation as part of their standard management tools, must be accurate in both the content and the process. In terms of content accuracy, they must monitor several hard variables (e.g. productivity, quality, material costs) and soft variables (e.g. improved job



satisfaction, improved teamwork) both prior to, and after the training. Process accuracy for example, involves the use of test and control groups (Giangreco, 2010).

**Costly training and evaluation**

Food safety training and its evaluation have been the subject of many studies in the recent years, with the main focus on aspects such as their importance, challenges, results, and impacts. One of the central challenges identified is related to the cost of developing, implementing and continually maintaining a food safety training system. Some costs are non-recurrent, such as the construction of storage buildings and sanitary facilities; but most costs are recurrent (Handschuch and others, 2013). Some of these costs arise from the regular training of staff members and occasional specialized training for specific staff. Other costs arise from regular audits and evaluation programs to determine whether a food safety program is in accordance to the planned arrangements (Mensah and others, 2011).

**Zero studies found on expenditures related to food safety training**

However, literature studies show that not enough attention has been paid to the financial payoff of training and education programs in food organizations, and globally there are no available and accessible studies on corporate expenditures related to food safety training or evaluation programs, including from the United States and Canada. Cost-related studies predominantly involve those about the costs associated with recalls, or the economic consequences of foodborne diseases.

**How to evaluate training**

One of the most familiar models that organizations use to evaluate their training efficiency is the Kirkpatrick's Four-Level Training Evaluation Model. According to the Kirkpatrick model, the principles of determining the efficiency, effectiveness and quality of training include: reaction to training, learning and knowledge acquisition, changes in job-related behaviour, and improvements in organizational-level results (Kirkpatrick,1967).

However, more recent studies show that practical methods for evaluating the effectiveness of food safety training are limited both by a lack of methodological detail and of defined outcomes. There remains a need to identify meaningful performance indicators at an individual level that can be used to measure the effectiveness of food safety training (Egan and others, 2007).

**Measuring a company's performance**

There are several performance measurement indices that are frequently used to evaluate a company's performance and one of the most common is return on investment (ROI). In fact, Phillips (1997) added a fifth level of evaluation to the Kirkpatrick's Four-Level Training Evaluation Model, which he called the calculation of ROI (See table below.)

KIRKPATRICK'S FOUR-LEVEL TRAINING EVALUATION MODEL MODIFIED				
Principles of determining efficiency, effectiveness & quality of training				
Reaction to training	Learning and knowledge acquisition	Changes in job-related behaviour	Improvements in organizational-level results	Calculation of ROI



However, little empirical research has been conducted to date on ROI in food safety education and training, which may be due to the fact that:

*Educators, trainers, and organizations have not been able to successfully relate to ROI in a meaningful way.*

Therefore, in order to have a meaningful evaluation of training programs used in industrial settings, there is a need to relate training to ROI (Williams and others, 2000).

## Safe Food Canada market study

Safe Food Canada conducted this project with the purpose of understanding the current spending on food safety training amongst Canadian food companies.

The results of this project were intended to help clarify how specific Canadian food organizations keep track of their expenditures and the return they achieve on their investment.

*One key finding was that industry statistics are not available on such corporate spending, nor on the average ROI from food safety training and education in Canada.*

### METHODOLOGY

The names and contacts at food corporations were assembled through announcements on social media (e.g. LinkedIn, and the Food and Beverage Ontario website), as well as personal contacts through experts in this field. Over 40 people were personally approached by email or phone and ultimately 20 people were qualified to be interviewed.

Statistics Canada frequently defines the size of businesses by their employment size<sup>1</sup>; they are as follows:

- Small businesses have 1 to 99 employees,
- Medium-sized businesses have 100 to 499 employees, and
- Large businesses have 500 employees or more

Researchers interviewed 9 small-sized, 4 medium-sized, and 7 large-sized food companies, from across the food system. The organizations are headquartered in Alberta, Manitoba, New Brunswick, Ontario and Quebec. Specifically, our investigation looks at methods of delivery, content, expenditures, and organizational impact. We believe this to be the first survey which looks specifically at financial investments from the private sector to support food safety training.

A standardized questionnaire was prepared to obtain the required information from Canadian food organizations (e.g. size of the organization, dollars spent, type of training, numbers of staff trained and

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<sup>1</sup> <http://www.statcan.gc.ca/pub/11f0027m/2011069/part-partie1-eng.htm>, Economic Analysis (EA) Research Paper Series 11F0027M, no.69



other pertinent information). The data from these interviews was compiled anonymously and forms the basis for our findings and conclusions.

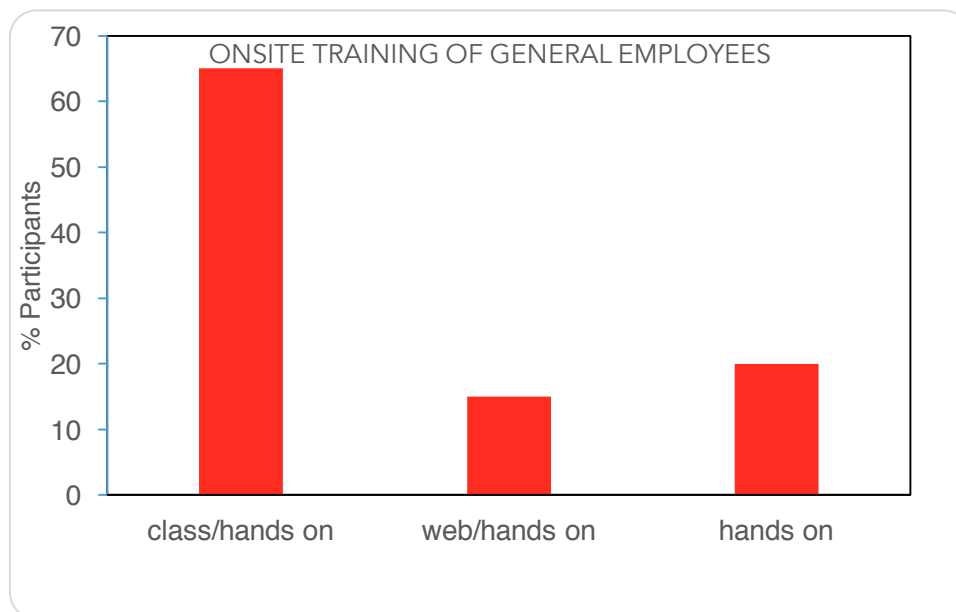
## FINDINGS

1. All the participants in the study declared that a majority of their employees (89% to 100% of employees) receive some type of food safety training. This includes basic training, HACCP training, risk assessment training, education on new regulations, and food safety certifications, etc.
2. All the participants in the survey declared that training and education for their general employees (i.e. front-line employees that are not in managerial or supervisory positions) are typically done onsite, and only in specific cases are employees sent outside of the organization for training and education.

At the same time, two-thirds of the participants (65%) declared that specific employees, supervisors, quality assurance managers and, laboratory managers, etc. are sent annually for external training, certifications, workshops, industry conferences, etc.

3. Onsite training of general employees (i.e. front-line employees that are not in managerial or supervisory positions) for both new and current staff are shown in Figure 1. The main methods of training and education were as follows:

- a) A combination of classroom learning and on the job (hands on) training (65%),
- b) A combination of e-learning or web based trainings and
- c) Hands-on (on-the-job) training (15%), which is mainly seen in retail stores and
- d) Hands-on daily training only (i.e. without classroom or e-learning training) (20%).



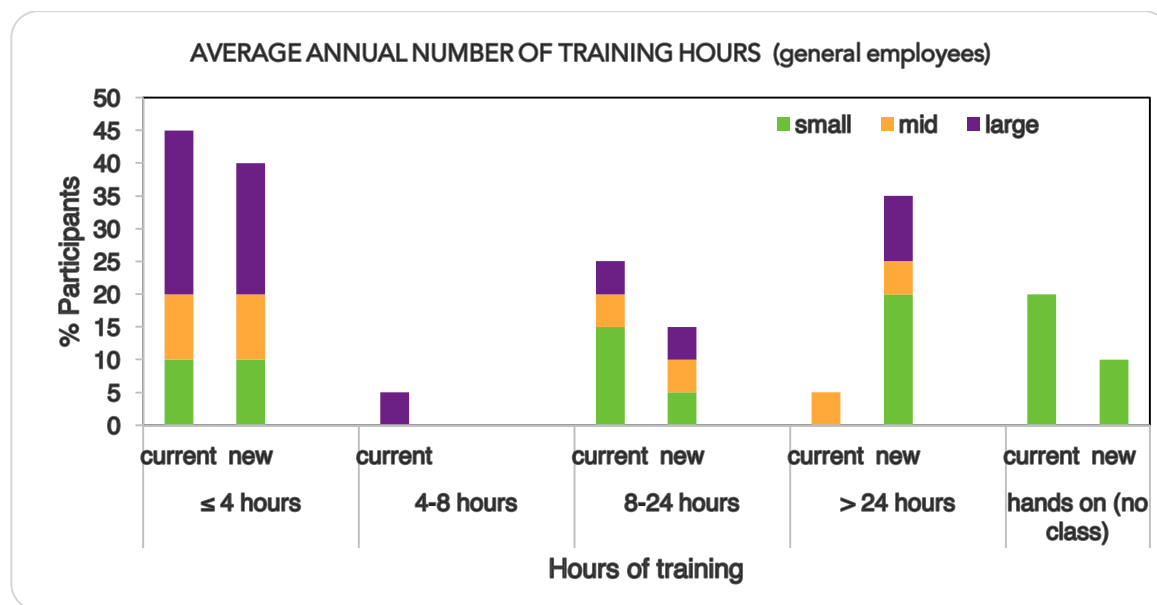
**Figure 1: Onsite training of general employees**

4. The average annual number of training hours/days (classroom or e-learning training) for general employees (i.e. front-line employees that are not in managerial or supervisory positions) are shown in Figure 2. The average number of “Refresher Training” hours/days (classroom or e-learning training) for current employees in the interviewed companies are:

- a) 45% of the participating organizations have less than 4 hours of annual classroom/e-learning refresher training
- b) 5% have between 4 to 8 hours of training
- c) 25% have between 8 hours and up to 24 hours of training in a year (it can be all in one day or spread out throughout the year)
- d) 5% have more than one day of annual training
- e) 20% of the participants do not conduct any type of class room or e-learning studies throughout the year and only have on the job (hands-on) training for their current employees

5. The average number of training hours/days (classroom or e-learning training) for new general employees is (see Figure 2):

- a) 40% of the participating organizations have less than 4 hours of annual classroom/e-learning training
- b) 15% have between 8 hours and up to 24 hours of training
- c) 35% have more than a day of training
- d) 10% of participants do not conduct any type of class room or e-learning studies for their new employees and only have on the job (hands-on) training



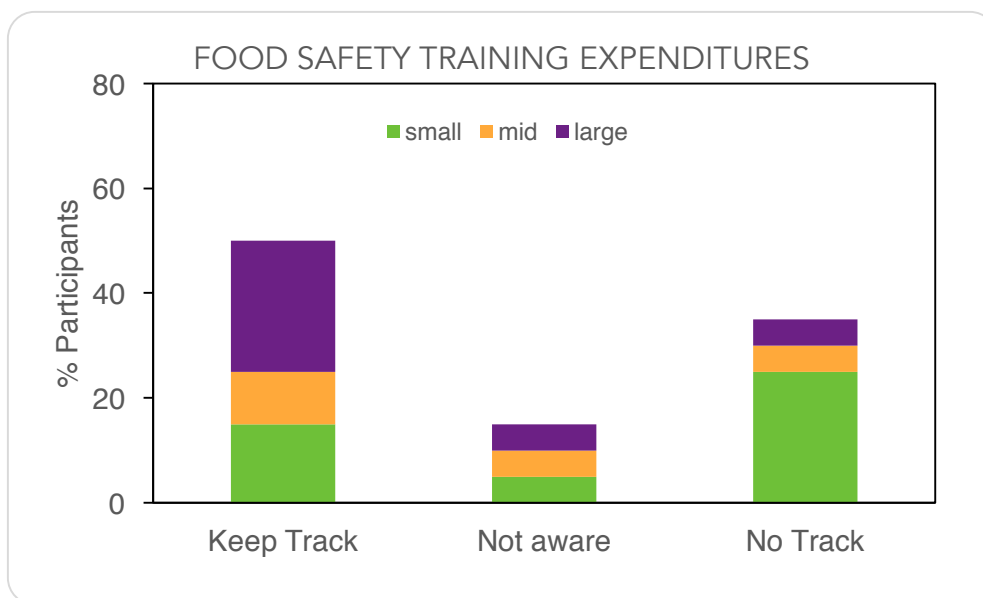
**Figure 2: Average annual number of training hours (general employees)**  
 Legend represents the size of the company (i.e. small, medium and large size companies)



6. The survey results show that half of the interviewed organizations keep track of their food safety training expenditures, whereas, 35% of the interviewed organizations either do not keep a record of their spending or they do not separate training expenditures<sup>2</sup> from other costs.

7. Of the interviewed companies, 15% declared that they were either not aware if the company kept track of training expenditures or they were not aware of the amount spent for training.

(See Figure 3)



**Figure 3. Food safety training expenditures**  
 Legend represents the size of the company (i.e. small, medium and large companies).

8. Of the 50% of the organizations that keep records of their food safety training and education expenditures, the average amount that the interviewed companies annually spend ranges from 0.25% - 2% of their payroll, which can be as low as \$500.00 annually up to millions of dollars annually depending on the size of the company, income, and other factors.

These results are similar to the results shown in the *CFIA Annual Report on Learning*, which its percentage of payroll spent on training (without the cost of salary) was 1.67% for 2013-2014.

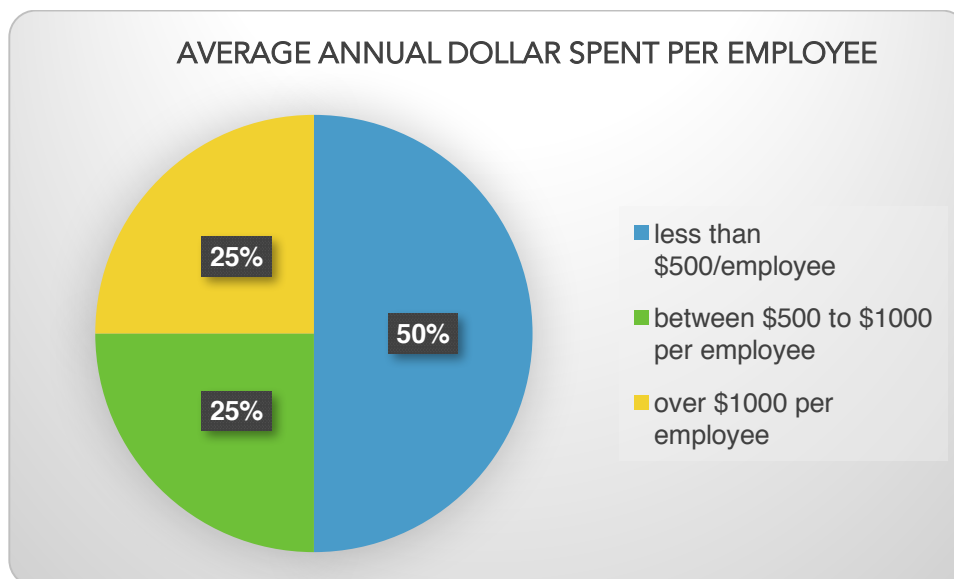
9. The average annual amount spent per employee by the organizations that provided a dollar amount<sup>3</sup> of their food safety training and education expenditures was estimated as (see Figure 4 on next page):

- a) 50% of the interviewed companies spent \$500 or less per employee annually
- b) 25% spent between \$500 to \$1,000 per employee
- c) 25% spent more than \$1,000 per employee annually

<sup>2</sup> Ten (10) companies kept track of their food safety training expenditures; eight (8) companies provided dollar values and two (2) companies provided a percentage of their payroll spent on training.

<sup>3</sup> Eight (8) companies provided a dollar value.





**Figure 4: Average annual dollar spent on food safety training per employee**

#### OTHER OBSERVATIONS AND COMMENTS

Based on the data obtained from interviewed companies, some observations can be made on current training and education practices in Canada.

A frequent remark was that the “basic” food safety training applied in most companies seems insufficient.

- ✓ Training material is not up-to-date in many cases and the same material is used for several years with little revision.
- ✓ Training hours do not seem to be adequate (e.g. 1 hour per year) in many cases.
- ✓ There is lack of time to train employees; for many firms, especially small companies, it is not financially feasible to stop production to conduct training.
- ✓ In many cases, new employees receive the same training courses and content that existing employees do.
- ✓ Training material is not specific for different roles in a company. For example, frequently the training material used for employees working in slaughter operations, is similar to training material for employees in production, and employees in packaging operations.
- ✓ Most training and education are done in classroom sessions and are not reflected in a practical form. There is a lack of practical, hands- on course material and practice.
- ✓ Only a small percentage of employees (typically supervision and management), have the opportunity to attend external training and education, workshops, and conferences. There is a lack of funding to engage a higher percentage of employees in hands-on experiences, workshops, conferences, etc.



- ✓ Many companies expressed concerns about financial problems restricting them from conducting the necessities of changing regulations. Small businesses claimed they require funding to be able to hire food safety specialist/consultants to assist in setting up the new food safety regulations being proposed.
- ✓ Small businesses mention that regulations need to be tailored to their size, and several expressed concerns about business viability due to changing regulations.
- ✓ Many companies stated that not everyone (academia, regulators, consultants, businesses, etc.) is on the same page or speaks the same language when it comes to food safety.
- ✓ The common concern is that there is a lack of experienced and trained professionals that companies can recruit either as employees or for auditing procedures.
- ✓ Multi-provincial corporations have unique challenges when the training content and materials are not consistent, or when requirements vary across provinces and each site must develop their own employee educational content independently. This has led to duplication of effort and also inconsistencies when employees of national firms are transferred from one province to another.
- ✓ Food companies that export have unique problems with being on the same page with other countries' regulations, which adds additional cost and complexity to their food safety training and education programs.
- ✓ Companies with higher employee turnover rates have more difficulty in recruiting and training new employees in terms of time, resources, and money.

### **Building a bridge between industry and educational institutes**

Concerning these statements by many companies, as well as the results obtained by the study, it seems that a better working partnership with educational institutes is desirable to have more prepared, skilled, trained and knowledgeable individuals in the food industry work force.

Setting up food safety educational programs and training courses based on the anticipated requirements of food companies, as well as effective internships is highly recommended. There is a need for a variety of occupational standards and training programs that are comprehensive and consistent across the food safety system.

The training and education programs should be available for organizations in a variety of delivery formats (electronic, video, face-to-face internal or outsourced programs).

It is important to meet the diverse learning requirements of all stakeholders, particularly smaller and medium-sized food companies.



## Recommendations

Following this exploratory study, our number one recommendation is to pursue a deeper study.

***A more comprehensive study should be undertaken, perhaps across North America, in order to better understand the return on investment by companies on their food safety learning.***

Further research is expected to provide a more robust benchmark of business spending on food safety training and education and enable individual businesses to better judge their level of expenditures.

***Companies ought to institute formalized measurement of performance improvement in food safety training, which would provide longer term benefits that come from clear understanding of the value received for resources spent.***

There is lack of effective processes to evaluate the quality of and the value for dollars spent on training and education in all the interviewed companies. There is a lack of awareness of their ROI or how to evaluate the effectiveness and the quality of received training. Most companies only evaluate the efficacy of food safety training by auditing and assessing non-performance and/or problems that occur.

***More bilingual courses, workshops, conferences, etc. should be available for French-speaking companies.***

Language is perceived as a barrier among employees working in food plants, factories, and stores. This applies in English speaking provinces where it was commented that there is a lack of bilingual material. Lastly, many businesses need training and educational material and trainers that speak other languages. This is especially a concern for smaller firms and those located in areas of rapid immigrant growth.

## Conclusion

The findings suggest that parts of the food industry are uncertain about the return on their spending on food safety training. Other research has shown that training and education can be effective in reducing food safety risks. Food safety training programs cannot be based entirely on a theoretical approach and adequate training should include hands-on practice. A balance is required.

However, this study demonstrates that few managerial or financial measurements are consistently recognized across the industry that accurately reflect the effectiveness of food safety training. Best practices are unclear; which ones ought to be used and how to benchmark the broader food industry? These would help to support food safety training and education.

Some limitations ought to be considered in this study. First, it included the use of self-reported data, which can be subject to social and economic desirability bias. Data reported by participating organizations were for Canadian companies and not verified. Also, the small sample should be considered as a limitation. The size, convenience, and homogeneity of the sample limit generalizations from this study. Nonetheless, the sample design for this exploratory study was appropriate to support observations and recommendations presented.



## Become a leader in further study

SFC is seeking partners who will commit to a more comprehensive study. If your organization is interested and wants to be seen as a leader in the food industry, consider joining with us and others to better understand the ROI of food safety training.

Visit [safefoodcanada.com](http://safefoodcanada.com) to learn more.

### **Safe Food Canada**

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