



## Patterns of food frauds and adulterations reported in the EU rapid alert system for food and feed and in Finland



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### ABSTRACT

Food control systems are sometimes challenged when requirements set by law are intentionally violated by Food Business Operators (FBOs) deliberately putting food on the market with the intention of deceiving the consumer (food fraud/adulteration). There is also a growing concern that in some cases food frauds could be considered more risky than traditional food safety threats since their public health risks are often unconventional and difficult to detect. In this study, food frauds/adulterations published in the EU Rapid Alert System for Food and Feed (RASFF) ( $n = 376$ ) in 2008–2012, notifications of recalls published by the Finnish Food Safety Authority (Evira) ( $n = 50$ ) in 2008–2012 and local Finnish cases ( $n = 16$ ) in 2003–2012 were analysed to determine the overall pattern of reported frauds/adulterations in 2008–2012. Products originating from outside the borders were most often reported by both RASFF (92%) and Evira (90%), whereas local Finnish cases mainly dealt with domestic production (69%). In RASFF, 33% of notification reasons reported illegal or unauthorized trade, practices or adulteration/tampering, whereas the rest (67%) concerned detected frauds or intention of fraud in documentation. Missing, fraudulent or improper documents were also most commonly reported in local Finnish cases (63%), but the pattern was very different in Evira's notifications, where unauthorized food, ingredients or processes comprised 98% of all fraud notifications reasons. Both in RASFF fraud notifications (50%) and in local Finnish cases (88%), the majority of cases concerned food of animal origin, whereas in Evira's fraud notifications food supplements dominated (44%) and food of animal origin was reported only once (2%). The FBO was accused and found guilty of a health crime in 83% of local Finnish cases processed in court ( $n = 12$ ). Although the differences detected in patterns of fraud/adulteration cases may be a reflection of true differences in frauds on the market, it may also indicate a risk of an overly narrow scope in surveillance of frauds/adulterations at the international, national or local level. This study also highlights the need to incorporate different types of data sources when planning national and international control systems for food frauds and adulterations.

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### 1. Introduction

Ensuring consumer health is a major concern in food control. Management of food safety risks usually focuses on hazards that occur naturally in foods or that are unintentionally caused by food processing, storage or handling within the food production chain. However, consumers, industry and authorities are also becoming increasingly aware of frauds, adulterations and criminal negligence. In contrast to failures in the production system or other

unintentional quality problems in the food chain, these comprise deliberate quality and/or safety problems caused by intentional behaviour of Food Business Operators (FBOs) to gain economic profit. This intentional behaviour of FBOs, i.e. opportunistic malpractice of FBOs, is also known as economic misconduct (Hirschauer & Zwoll, 2008). In addition to public health implications, food frauds and adulterations may have economic implications for consumers, other FBOs through loss of sales due to loss of confidence of consumers, costs for local authorities due to increased work load and costs to government in loss of value-added tax from sales. There is also a growing concern that in some cases food frauds could be considered more risky than traditional food safety threats since their public health risks are often unconventional and difficult to detect. Although food frauds and adulterations challenge both consumers and food control systems,

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information about the frauds detected and reasons behind them is currently very limited. Thus, identification of the best options to decrease and prevent frauds in both domestic and imported food is important. To this end, patterns of food fraud/adulteration were evaluated here using the EU Rapid Alert System for Food and Feed (RASFF) notifications, notifications of recalls published by the Finnish Food Safety Authority (Evira) and local Finnish cases.

Food fraud is a general term defined by Spink and Moyer (2011) used to cover the deliberate and intentional adulteration, substitution, addition, tampering or misrepresentation of food, food ingredients or food packaging or providing false or misleading statements about the product for economically motivated reasons. According to the Criminal Code of Finland (1889/39), a perpetrator has intentionally caused the consequence if causing the consequence was the perpetrator's purpose or he/she had considered the consequence as a certain or probable result of his/her actions. A consequence is also intentionally caused if the perpetrator has considered it as certainly connected to the consequence that was the objective. Criminal negligence is in question if the perpetrator violates the duty to take the due caution required, although he/she could have complied with it.

An FBO's negligence to comply with food regulations can also appear in repeated and deliberate failure to follow instructions or orders given by control officials. Control officials can give, for instance, hygienic orders or orders concerning the own-checking system and obeying these orders can mean costs for FBOs. But deliberately failing to follow these orders can produce a public health risk and deception of consumers when they believe the foodstuff is handled according to regulations. These FBOs also benefit at the expense of FBOs following orders and regulations.

Fraud is defined by the Criminal Code of Finland (1889/39) as follows: A person who, in order to obtain unlawful financial benefit for himself or herself or another or in order to harm another, deceives another or takes advantage of an error of another so as to have this person do something or refrain from doing something and in this way causes economic loss to the deceived person. This is in line with the category "fraud/adulteration" of the public RASFF database, which includes both clear frauds such as fraudulent documents or adulteration cases as well as cases where documents are improper, expired or even missing. The latter cases are in line with the Criminal Code fraud definition since although they may be administrative mistakes intentional fraud attempts cannot be excluded, and therefore, competent authorities reporting to the RASFF system have defined the reason for notification as a fraud/adulteration.

Prevention of food fraud, as experienced by the EU in the Belgian dioxin contamination case in 1999 (Casey, Lawless, & Wall, 2010), when dioxin was introduced into the Belgian food supply via contaminated animal fat used in animal feeds, was also one of the reasons for adopting EU Regulation 178/2002. Article 8 'Protection of consumers' interests' states: "Food law shall aim at the protection of the interests of consumers and shall provide a basis for consumers to make informed choices in relation to the foods they consume. It shall aim at the prevention of: (a) fraudulent or deceptive practices; (b) the adulteration of food; and (c) any other practices which may mislead the consumer." In addition, correct and exact labelling, presentation and advertising of foodstuffs intended for sale is regulated by Directive 2000/13/EC. The European Commission has responded also to the rise in food fraud by establishing the European Anti-Fraud Office (OLAF) in 1999 (European Commission, 1999/352) to investigate frauds, including also suspicions of fraud concerning agricultural products. The main task of OLAF is to protect the financial interests of the EU against systematic fraud of all kinds (European Anti-Fraud Office, 2010). According to OLAF's Senior Investigator Marc Wils (Finnish Fraud

Seminar, 2011), 7000 allegations of agricultural and fishery fraud were made in 1999–2011 in Europe, 3000 cases were prosecuted and 300 individuals received prison sentences.

The intentional tampering of food is not a recent problem. Many food additives commonly used in the 18th and early 19th centuries were poisonous. For instance, to make bread whiter bakers added alum and chalk to the flour, and the weight or volume of bread was increased with mashed potatoes, calcium sulphate, pipe clay or sawdust (Wood, 2012). Several food fraud incidents with a direct link to public health have been reported. At least 300 000 children became sick and six died after consumption of a Chinese-manufactured melamine-tainted infant formula (Guan et al., 2009; Jia & Jukes, 2013). In Italy, a wine adulteration with methanol in 1986 caused the death of 23 people (European Communities, 2009). In Spain, vehicle oil was mixed in oil for human consumption in 1981, and the resultant toxic oil syndrome caused more than 20 000 cases of illnesses and 1663 deaths among those exposed (Borda et al., 1998). In 2008, sunflower oil contaminated with mineral oil was exported from Ukraine to several EU countries (European Commission, 2010).

Frauds linked to meat and meat products as well as to food ingredients dominate the reports on food fraud cases. In 2002, after the BSE (Bovine Spongiform Encephalopathy) crisis, major Japanese meat companies mislabelled imported beef as domestic meat (Yeboah & Maynard, 2004). In the UK, a large-scale fraud exposed in 2003 involved the diversion of unfit poultry meat into the food chain from a pet food plant (FSA, 2004), and in 2007, condemned, diseased poultry was bleached and diverted back into the food chain (Reynolds, 2008). In China, non-approved colour (Sudan) was used in meat products in 2005 (Jia & Jukes, 2013). In Northern Ireland, beef and poultry of unknown origin were illegally repackaged and placed on the market for human consumption (Reynolds, 2008). In Germany 2006, a rotten meat scandal occurred where around 150 tonnes of rotten meat was distributed to restaurants nationwide and the same year in France, problems emerged with corned beef regarding the infusion of unfit meat into the product and falsely declaring it as Halal Food (Bosley, 2007). In 2013, falsely labelled beef products were found in several EU member states, with beef products containing more than 60% horse meat (FSA, 2013).

In a study of frauds in food ingredients by Moore, Spink, and Lipp (2012), olive oil, milk, honey and saffron were the most common targets for adulteration reported in scholarly journals, and potentially harmful issues identified included spices diluted with lead chromate and lead tetraoxide, substitution of Chinese star anise with toxic Japanese star anise and melamine adulteration of high protein content foods. In Austria in 1985, some producers of white wine added the organic compound diethylene glycol (DEG) to their products to improve the 'mouth feel' (European Communities, 2009).

To detect serious risks, including frauds, the Rapid Alert System for Food and Feed (RASFF) was launched in 1979 in the EU. RASFF provides food and feed control authorities with an effective tool for exchanging information about measures taken in response to serious risks detected in relation to food or feed. There are two main kinds of RASFF notifications: market notifications and border rejections. Contained within market notifications are three types of notifications: Alert notifications, Information notifications and News, the latter sent when information is judged merely interesting for control authorities. Alert notifications are sent when a food or feed presenting a serious health risk is on the market and when rapid action is required. Information notifications are used when a risk has been identified about a food or feed placed on the market, but other members do not have to take rapid action. This is because the product has not reached their market or is no longer

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