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TECHNICAL GUIDANCE FOR THE IMPLEMENTATION OF E-NOTIFICATION SYSTEMS FOR FOOD CONTROL

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PREPARATION OF THIS DOCUMENT

Food exporters continue to face difficulties in accessing major markets. They can struggle to understand the import controls which may lead to food commodities being rejected, detained, or in some instances destroyed. In 2005 the Food and Agriculture Organization of the United Nations (FAO) developed and published Fisheries Technical Paper No. 473, *Causes of detentions and rejections in international fish trade* (FAO, 2005). In 2018, FAO conducted a careful analysis of the fishery and aquaculture rejection data available from Canada, the European Union, Japan and the United States of America.

The following year, the Products, Trade and Marketing branch of the FAO Fisheries and Aquaculture Division (NFIM) brought together experts from various importing countries at a workshop held in Rome from 30 October to 1 November 2019. The FAO workshop on risk-based fish inspection at borders discussed the data and processes in these respective territories. It sought to identify best practices within a risk-based food import control system and recommend further areas for consideration, while remaining consistent with FAO/Codex Alimentarius guidance. In addition, the workshop intended to identify capacity building areas for developing countries which may, in turn, reduce import rejections and detentions. Participating countries were tasked with providing case studies to illustrate how they implement the risk-based import system. The discussions underlined that on a global scale most countries are still transitioning towards fully “risk-based” imported food control systems, and each country is at a different stage in that implementation process. The workshop provided another opportunity to share experiences and best practices, and yielded a set of recommendations such as the development of guidance for the implementation of import notification systems. As a follow-up to these recommendations, FAO developed a project entitled “Digital solutions in support of improved official food control services”, with a component focused on strengthening capacity for the development and implementation of e-notification portals. The project provided guidance and support based on international best practices, as well as the experiences of other countries that have successfully implemented effective food control systems.

Under the project umbrella of the project, FAO organized an expert meeting for the development of the technical guidance for the implementation of e-notification systems for food controls. The resulting publications were written by Bert Popping and Spencer Henson with the help of the FAO Secretariat, whose members are Esther Garrido Gamarro, Giulia Loi, John Ryder and Markus Lipp. Several key experts also provided inputs and comments to for this Guidance: Ana Sanz Fernández, Eduardo Aylwin, Ernest Phoku, Hajime Toyofuku, Josiah Syanda, Laura-Maria Mueller, Marilynne Hopper, Naomi Flynn, Sally Jennings, and Simon Padilla.

ABSTRACT

Over a third of global agrifood exports cross borders at least twice before reaching the final consumer. The complexity of food supply chains and the growing importance of the global agrifood trade thus creates new and ever greater challenges for the management of food safety.

Geographically dispersed foods that have been produced, processed and distributed by multiple actors can pose heightened food safety risks. Tracing the origins of unsafe food is also more complex and time-consuming. For this reason, many nations have implemented more rigorous systems of food control for agrifood imports, while many others need assistance to develop them.

To this end, FAO developed this guidance as part of a project entitled “Digital solutions in support of improved official food control services”. The aim is to provide guidance for the design and implementation of a food control e-notification system, one tailored to national needs and resources. This guidance includes the system’s legal basis, its structure and operational parameters, as well as its infrastructure and human resource requirements.

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ABBREVIATIONS AND ACRONYMS

AAC	Administrative Assistance and Cooperation System
BRS	Business Requirements Specifications
BVL	The Federal Office of Consumer Protection and Food Safety
CAC	Codex Alimentarius committee
CCL	Core Components Library
CFIA	Canadian Food Inspection Agency
COI	certificate of inspection
ECCP	European Commission Contact Point
EFSA	European Food Safety Authority
FBO	food business operator
IMSOC	information management system for official controls
iRASFF	Electronic system implementing the RASFF and AAC procedures
ISO	International Organization for Standardization
RASFF	Rapid Alert System for Food and Feed
RIAL	Red de Información y Alertas Alimentarias
SCRDM	supply chain reference data model
SOP	standard operating procedure
SSL	Secure Socket Layer
UNECE	United Nations Economic Commission for Europe
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
USDA	United States Department of Agriculture
USFDA	United States Food and Drug Administration
XML	eXtensible Markup Language

EXECUTIVE SUMMARY

Over a third of agrifood exports now involve global value chains: this means they cross borders at least twice before reaching the final consumer. The complexity of food supply chains and the growing importance of the global agrifood trade thus creates new and ever greater challenges for the management of food safety.

Geographically dispersed foods that have been produced, processed and distributed by multiple actors can pose heightened food safety risks. Tracing the origins of unsafe food is also more complex and time-consuming. For this reason, many nations have implemented more rigorous food control systems for agrifood imports, while others need assistance to develop them.

To this end, FAO developed this guidance as part of a project entitled “Digital solutions in support of improved official food control services”. The aim of the project is to provide guidance for the design and implementation of a food control e-notification system, one that is tailored to national needs and resources.

This document identifies the pre-requisites for an e-notification system and highlights the legal framework that needs to be in place to enable it. It outlines the resources such a system requires – human, hardware and software – and lays down its typical structure; this includes the responsibilities that need to be assigned, the types of notifications, and the required institutional arrangements. Finally, it emphasizes the need for data traceability and the importance of its format, which should allow the international exchange of the information if necessary.

A checklist of aspects to be considered when implementing an e-notification system is provided for the user, as well as four examples of existing systems operating at different levels of complexity – from Canada, Chile, the European Commission and Japan.



CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Global trade in agrifood products has more than doubled since 1995 and reached USD 1.5 trillion in 2018 (FAO, 2020a). Although this trade has historically been dominated by industrialized nations, emerging and developing countries now account for more than a third of it. At the same time, agrifood systems in both industrialized and developing countries have become more complex and interrelated. They have mirrored the evolution of global food demand, facilitated by efforts to liberalize agrifood trade and developments in transportation, communications and food technologies. Over a third of agrifood exports now take place through global value chains, crossing borders at least twice before reaching the final consumer.

The complexity of food supply chains and the growing importance of global agrifood trade brings new and more pronounced challenges for the management of food safety. On the one hand, geographically dispersed foods that have been produced, processed and distributed by multiple actors can pose heightened food safety risks. On the other, tracing the origins of unsafe food is more complex and time-consuming. The World Health Organization (WHO) estimates that every year 1 in 10 people fall ill worldwide after eating contaminated foods (WHO, 2015). In response, many nations have implemented more rigorous food control systems for agrifood imports. Yet while these may afford greater protection against imports of unsafe food, they can also impede trade. Indeed, many developing countries highlight the challenges they face in complying with these requirements. For example, the estimated annual cost of non-compliance with food safety requirements, which then results in border rejections, is between USD 5 billion and USD 7 billion (Jaffee *et al.*, 2019).

The effective management of food safety in complex and globalized supply chains – in a manner that does not impede trade or place undue burdens on developing countries – requires the implementation of fit-for-purpose food control systems. Such systems must develop and evolve in the face of emerging challenges. Yet the resources and institutional adjustments required to implement and maintain these systems can constitute a challenge for many developing countries, especially those that are low- or lower-middle-income. For this reason, FAO developed a project entitled “Digital solutions in support of improved official food control services”, which includes a component focused on strengthening capacity for the development

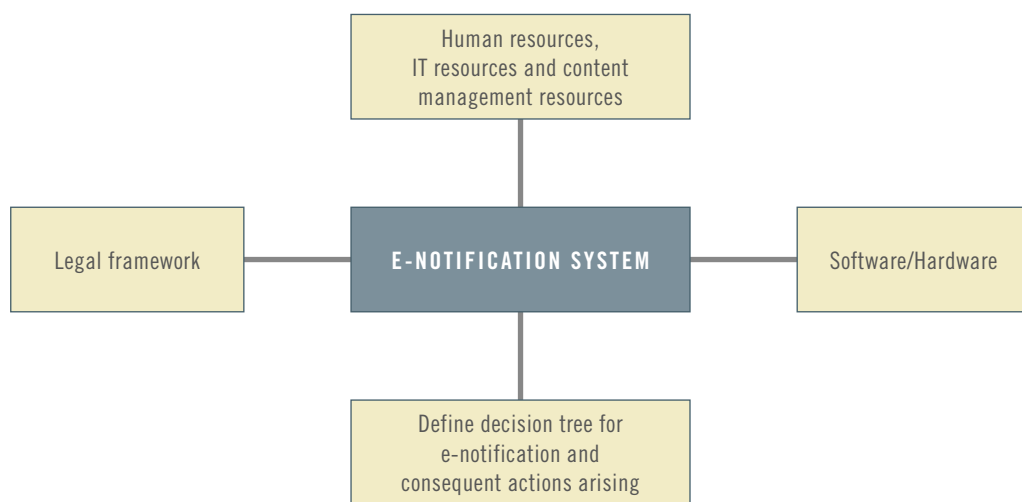
and implementation of e-notification portals. The project also provides guidance and support based on international best practices, as well as the experiences of other countries that have successfully implemented effective food control systems.

Data generated by these systems are not only critical for consumer protection, but also contribute to trade transparency and build trust among trading countries. Moreover, the analysis of data extracted from e-notification portals provides valuable information about regional or global food safety issues. One example is the data extracted from the Fisheries and Aquaculture Division of FAO on import notifications as these relate to fisheries and aquaculture products. The data are uploaded in the FAO statistics system, FishstatJ, and analysed further to understand food safety. Based on these findings, FAO can then take further action.

1.2 SCOPE

This document provides guidance for the design and implementation of a food control e-notification system that is tailored to national needs and resources. This guidance includes the system’s legal basis, its structure and operational parameters, as well as its infrastructure and human resource requirements. The document also provides some insights into how to use e-notification data to focus control on at-risk products. Figure 1.1 provides a summary of the critical components of an e-notification system.

FIGURE 1.1 ELEMENTS OF AN E-NOTIFICATION SYSTEM



1.3 USE OF THE TECHNICAL GUIDANCE

This guidance document provides a resource for national food control authorities that are looking to implement a new food control notification system, or those looking to upgrade an existing system to the e-notification format. In so doing, it aims to promote and support the implementation of an e-notification system that is:

- > effective, efficient and sustainable, given national needs and/or circumstances;
- > compatible with e-certification such as ePhyto (IPPC, 2021) and other food control data systems, as well as other applicable data systems including customs, trade data recording, etc.;
- > in line with applicable international standards;
- > engaged in the harmonization and greater compatibility of e-notification systems across nations and regions.

As a tool it allows users to assess the status of a notification and/or e-notification system, with the outcome of the self-assessment component providing a guide for the upgrading and/or implementation of these systems.

1.4 ENABLING ENVIRONMENT

There are several pre-requisites to establishing an efficient electronic notification system, namely: an existing food control system, a risk-based inspection system, and a notification system. The existence of these pre-requisites will enable the implementation and effective use of an electronic notification system.

1.4.1 FOOD CONTROL SYSTEM

To ensure the safety and quality of food, whether imported or produced locally, a functioning control system needs to be in place. The responsibility for this lies with the prescribed competent authorities, and often involves ministries responsible for food safety, agriculture, health, trade, etc. In some cases, a distinct food safety authority has been defined. At the same time, a policy and legal framework needs to be in place to implement and enforce this system. Such a framework must clearly articulate the policy and legislative foundations of the control system, the institutional structures involved in its implementation, level, and composition of resources. A clear strategic plan is also needed to implement the control system, its day-to-day management and maintenance.

Detailed information on implementing a food control system, and its associated legal framework, can be found in Section A.1 of FAO Food Control System Assessment Tool Dimension A: Inputs and Resources (FAO and WHO, 2019a). Such frameworks define the control functions that need to be executed to ensure food control. As such, they are typically grouped into the routine monitoring of food products and the risk-based monitoring of food products. A detailed description of both types can be found in Sections B1 and B2 of the FAO Food Control System Assessment Tool: Dimension: Control Functions (FAO and WHO, 2019b).

1.4.2 FOOD CONTROL NOTIFICATION SYSTEMS

The role of a notification system is to inform competent authorities and other stakeholders, including food businesses and consumers, when a food product is found to be a health risk, or non-compliant with the legal requirements of the food control system. It then defines the associated action to be taken.

There are various types of notification systems. They are differentiated by the degree to which notifications are routinely issued in the event of a food control violation, the way in which notifications are issued, and/or the system's geographical and stakeholder scope. Table 1.1 provides a summary of the different types.

An e-notification system processes and distributes such notifications by electronic means, allowing for the efficient and timely delivery of information to stakeholders. As a result, e-notification systems facilitate the rapid distribution of information on border rejections, product withdrawals, etc. This in turn enables competent authorities, food businesses and consumers to take appropriate and immediate action against food safety hazards.

E-notification systems can also serve as a valuable risk assessment and prediction tool. Analysis of e-notification data can identify whether an instance of non-compliance is a one-off occurrence or represents a sustained problem. Similarly, the system can identify whether rates of non-compliance are changing over time, and/or whether they are particularly high for products originating from a particular country and/or supplier. Monitoring plans can also be defined that focus on high-risk products in order better to protect consumers.

TABLE 1.1 TYPES OF FOOD CONTROL NOTIFICATION SYSTEM

TYPE OF SYSTEM	DESCRIPTION
Ad hoc system	Periodic and non-systemic notifications
Manual system	Systemic notifications with manual processing of data and distribution of notifications
Semi-automated e-notification system	Manual processing of notifications but electronic distribution
Fully automated e-notification system	Electronic processing and distribution of notification
Internationally integrated e-notification system	Electronic processing and distribution of notifications; the system is integrated with that of other nations.

E-notification systems can differ both in their complexity and in the way(s) that information is relayed according to the prevailing food control system, notably in terms of the needs and priorities of the competent authority, available resources, etc. In this sense, the business requirement specifications for any e-notification system must be specified in order to tailor it to national needs.

E-notification systems also differ in terms of the food products they cover, and the food control issues on which notifications are issued. For example, the US Food and Drugs Administration (USFDA) e-notification system does not cover meat and poultry, and meat and poultry products (which fall under the jurisdiction of the US Department of Agriculture) or feed. By contrast, the European Union's Rapid Alert System for Food and Feed (RASFF) covers all food and feed products, as does the Quarantine Station of the Ministry of Health, Labour and Welfare in Japan.

1.4.3 RISK-BASED INSPECTION SYSTEMS

While routine control is typically based on a predefined (annual) sampling plan across imported and/or locally produced food products, a risk-based sampling plan is updated on an ongoing basis according to the occurrence of the hazard(s) of interest. This may be for a pre-defined microbial pathogen or pesticide residue of interest, for example. An e-notification system is therefore not only important for the identification of acute issues that may require immediate actions to protect public health; it can also inform risk-based inspections by identifying significant, persistent and/or worsening hazards that require monitoring and ongoing assessment. Guidance for risk-based food inspections is provided in the FAO *Risk-based food inspection manual* (FAO, 2008), the FAO *Risk-based imported food control manual* (FAO, 2016), and the principles of risk-based meat inspection and their application (FAO, 2019).

The analysis of e-notification data can thus identify the most prominent food safety issues for specific food products (for example, microbial pathogens in raw milk cheese). They also reveal whether trends in these are positive or negative, or whether certain food products exhibit the worse patterns of non-compliance etc.

1.5 APPROACH TO THE DEVELOPMENT OF THE TECHNICAL GUIDANCE DOCUMENT

The guidance was developed based on a review of selected existing e-notification systems. These are summarized in Annex 1. In each case, key aspects of these systems were evaluated, and a list of requirements was compiled. Prior research on the efficacy of these systems was consulted; in most cases, however, this was limited. Key experts also reviewed this document in the field, whose contribution were very much appreciated.

1.6 TARGET AUDIENCE FOR THE TECHNICAL GUIDANCE DOCUMENT

The target audience for this document is the competent authorities of the countries seeking to implement an e-notification system within an existing food control system, and their IT support. A checklist is provided in Annex 4 to support the application of the guidance document.



CHAPTER 2

E-NOTIFICATION SYSTEM

2.1 DEFINITION OF AN E-NOTIFICATION SYSTEM

An e-notification system is formally defined as a system whereby:

A document is served by sending an electronic message to the electronic service address at, or through which, the party has authorized the electronic service. The message specifies the exact name of the document served and provides a hyperlink at which it can be viewed and downloaded.

In the context of a food safety notification system, this process is employed by competent authorities to notify other actors about a food product's non-compliance with food control requirements. These other actors can include competent authorities (such as regional authorities and/or competent authorities in other countries), food businesses and/or consumers. Food control e-notification systems therefore relay information about actions that have been taken in response to an instance of non-compliance (for example, the border rejection of a product) or indicate that actions are needed. These may include, for example, the withdrawal of a product by food businesses, actions by other nations to prevent the entry of a product into their territory, and/or advise consumers to avoid certain products.

2.2 NATURE OF AN E-NOTIFICATION SYSTEM

E-notification systems can have various levels of complexity and functionality. At the very least, such systems consist of:

- > a database that hosts information on applicable information – for example, instances of border rejections, food recalls, etc.;
- > a search engine to retrieve specific information;
- > a user interface including secure access via login; and
- > the capability to send messages to specific recipients via e-mail and/or text message.

A very useful and highly recommended extension is the ability to exchange data with e-certification systems, or ideally integrate these into a single national system. E-certification systems for food imports that are capable of exchanging information with an e-notification system are therefore useful when tracing products back to

their origin and taking timely and appropriate food control action. As an example, if a food on the market has been found to be contaminated with high levels of pesticides, and the plant-based component of the food has been imported from a third country, this can be quickly identified and traced back if the e-certification system is linked to the e-notification system.

At the highest level, a transnational exchange of information between e-notification/e-certification systems can be imagined. For example, if the competent authority of country A identifies a health hazard due to the presence of microbial pathogens, and the same product is imported to country B – where the exchange of data between the two countries' e-certification and e-notification systems is enabled – an alert could quickly be issued for country B, enabling the product's rapid withdrawal in both countries.

2.3 CONTENT OF THE E-NOTIFICATION PORTAL

The content of the e-notification portal is defined in the implementing country's business requirement specifications. It is advisable, when creating the content, to follow the recommendations outlined in the *Guidelines for generic official certificate formats and the production and issuance of certificates* (CAC/GL 38–2005), especially with reference to field descriptors such as port of entry, product description, country of origin, etc. (FAO, 2001).

Typically, a simple e-notification system contains:

- > The list of notifications issued by the competent authority, ideally grouped by notification type – e.g. alert, border rejection or information notice.
- > The cause of notification.
- > A statement as to whether the issue is ongoing or closed.
- > The actions taken (if required) – for example, the recall or withdrawal from the market, whether the product was rejected or detained at borders, etc.
- > Details of the public authority or other agent responsible for taking this action.

Data in the e-notification portal should be verified and curated. The option to filter data by different fields should be provided, and in an ideal situation allow for Boolean search operations.

2.4 UPDATING INFORMATION IN THE PORTAL

Data in the portal must be verified and curated to ensure accuracy and kept updated in the light of new information, actions taken, and changes in circumstances. Importantly, data processing and handling must be undertaken in a timely manner to facilitate the implementation and completion of the actions needed (for example, product recalls or border rejections). Timeliness also minimizes the risk that such actions are taken erroneously or inappropriately.

2.5 PORTAL STRUCTURE

At the very least a portal consists of a data entry element, a data retrieval element and a display element. Through the data entry element, information on non-compliant products or products with food safety risks can be entered. This typically happens through a user interface structure that can be tailored to the needs of the respective competent authority. A standalone system would require fewer fields than one that is linked to other databases, such as an e-certification system or a specific system on food fraud.

The data retrieval element usually contains a search engine and a user interface to display the data. This can be part of a standalone computer programme or a web interface. The latter is beneficial since the web interface is usually accessed through commonly used internet browsers such as Chrome, Firefox and others. What is more, a web interface is independent of the retriever's operating system (for example, Windows, iOS, or Android). Unsurprisingly therefore, many e-notification systems are web-based.

The e-notification portal should be designed to differentiate the information displayed according to users' needs and permissions. Specific user roles need to be clearly defined for this purpose, as do the permissions of those who can grant such access rights and on which basis. Such definition ensures that users' needs are attended to, while respecting data privacy and confidentiality issues. It does demand, however, that users pre-register and sign into the portal on each occasion before accessing the database. A user from the competent authority may therefore be able to view the entire record, including the name, address, and registration number of the importer and/or exporter, value and/or volume of the consignments, cause of the infraction, etc. Conversely, consumers may only be able to access information on the food product, the hazard involved, and the action to be taken. A food business operator may be able to see all the information that relates to their specific product, or a consignment for which a notification has been issued. The latter aside, only information available to the public will be available to the food business operator.



CHAPTER 3

ENABLING E-NOTIFICATION WITHIN FOOD CONTROL SYSTEMS

3.1 ENABLING LEGISLATION

The establishment of an e-notification system is generally embedded in a legal framework that provides for the rights and responsibilities of the competent authority concerning:

- > when and how notifications are issued
- > the types of notifications issued
- > data privacy and confidentiality.

Generally, this legal framework also defines the rights and responsibilities of other stakeholders, including consumers and food businesses, with respect to the provision and/or access to information.

Examples can be found in the case studies included in Annex 1. The RASFF system provides a good example where the system and the responsibilities of the different stakeholders are defined in the relevant legislation.

3.2 INTERNATIONAL STANDARDS AND GUIDELINES

While an e-notification system may initially be developed as a stand-alone, single, national system, it is worth considering that competent authorities may consider connecting to other systems and databases at a later stage. In this case, the appropriate preconditions need to be established before the e-notification system is created. Here, numerous international standards help, including naming conventions for food and food groups, customs codes, and IT standards. A more detailed description is available in Annex 2.

To guide users in defining their needs with respect to the e-notification system, business requirements can be specified. Templates for this can be found on the UNECE website (UNECE, 2021).

3.3 REQUIRED INSTITUTIONAL ARRANGEMENTS

Clear institutional responsibilities and arrangements are key to the efficacy of an e-notification system. These include identifying when a notification is required and executing the necessary procedures to ensure that such notifications are made in a timely manner. If several ministries are potentially involved in a food safety incident (e.g., ministries of health, agriculture, trade, fisheries and aquaculture, etc.), it needs to be clear who is responsible in the event of a food-safety-related incident, and what action they should take as a consequence. This can entail the withdrawal of a product from the market and notifying the importer and food stores where the product is stocked. It may also entail informing specific parts of the population of a food safety risk – for example, in the event of an undeclared food allergen.

Similarly, applicable legal norms and other requirements must be complied with, and the system must be appropriately maintained and updated. Dedicated personnel and/or teams are also required for decisions concerning notifications, as well as the handling, processing and storage of data, and the maintenance of IT systems. Such personnel or teams must have the authority to make decisions within their realm of responsibility and have access to the necessary resources that enable them to fulfil their mandate effectively and efficiently.

The definition and allocation of institutional responsibilities should build upon prevailing responsibilities and competencies. This implies that entities *beyond those* primarily responsible for food control may play a key role within the e-notification system. Examples may include customs and other border inspection institutions, government websites and other information system operators. Functions may also be undertaken by existing and/or upgraded public institutions or outsourced to private service providers.

3.4 DESIGNATION OF DUTIES AND RESPONSIBILITIES

Often, the responsibility for food control is shared across government ministries, departments and/or agencies; these may include health, agriculture, consumer protection, fisheries and aquaculture, trade, etc. When implementing an e-notification system it is important to define which of these has primary responsibility, and/or how responsibility is allocated across government ministries, departments and/or agencies for the system's distinct components. Furthermore, a clear workflow is needed where actions from distinct institutional entities are required.

As an example, the Red de Información y Alertas Alimentarias (RIAL) e-notification system in Chile provides a decision tree for each of the ministries involved (namely, the Ministry of Health, the Ministry of Agriculture and the Ministry of Environment). The tree signals whether they are responsible for a particular alert; once responsibility has been decided, the designated ministry follows up with the case and issues an alert. A comparable system exists in the United States of America, where the Food and Drugs Administration (USFDA) and the US Department of Agriculture (USDA) have set out the responsibilities for approving imports, as well

as issuing information on rejected consignments of food products. Most notably, the USDA is primarily responsible for meat and meat products, and the USFDA for all other foods. However, where the product(s) contain(s) meat as a minor ingredient (a pizza containing pepperoni, for example), the responsibility lies with the USFDA.

3.5 TYPES AND CLASSIFICATIONS OF NOTIFICATION AND INFORMATION TO BE PROVIDED

3.5.1 TYPES OF NOTIFICATIONS

Specific classes and types of notifications have proven useful, both historically and currently. For the purposes of consistency, and in order to potentially exchange notifications between (international) systems at a later point in time, it is advisable to use the same notification types and classes. Examples are provided in 3.1.

TABLE 3.1 TYPES OF NOTIFICATIONS

CAUSE	TYPE OF CAUSE
Chemical	<ul style="list-style-type: none"> > Additives > Antibiotics > Contaminants > Heavy metals > Pesticides > Veterinary drugs
Histamine	<ul style="list-style-type: none"> > Histamine
Microbiological	<ul style="list-style-type: none"> > Bacteria > Virus
Parasites	<ul style="list-style-type: none"> > Presence of parasites
Toxins	<ul style="list-style-type: none"> > Biotoxins > Mycotoxins > Other toxins
Allergens	<ul style="list-style-type: none"> > Specific undeclared allergen(s)
Other causes	<ul style="list-style-type: none"> > Adulteration > Attempt to illegally import > Foreign body > Issues with a health certificate > Labelling > Packaging > Poor traceability records > Poor hygiene conditions > Radiation > Unauthorized operator > Unfinished disposal of offal > Unfit for human consumption > Unsuitable transport conditions

3.5.2 CLASSES OF NOTIFICATIONS

Typical classes of notifications used are:

- > food commodity to be rejected
- > food commodity to be destroyed
- > food commodity to be recalled
- > information notification for attention
- > information notification for follow up.

3.5.3 INFORMATION TO BE PROVIDED IN NOTIFICATIONS

Specific information should be provided as part of any notification. Typically, this includes:

- > notification classification
- > notifying country
- > inspection control post
- > country of dispatch
- > country of destination
- > date of notification
- > causes of import notification
- > risk decision
- > legislation
- > commodity
- > product category
- > product name
- > HS code
- > unit weight/volume
- > type of check
- > reason for inspection
- > sampling date
- > analysis
- > analytical result
- > maximum permitted level
- > measures taken, type and who by
- > contact person.

3.6 CHAIN OF CUSTODY FOR NOTIFICATION DATA

It is important to establish and maintain the integrity of data throughout the notification system. The chain of custody should start from the point at which a decision is made with respect to the need for a notification to be issued; thereafter, it needs to be maintained throughout the entire process, until the case is closed. Often this requires the integration of data from multiple sources and/or systems, e.g. the pre-registration and recording of imports, customs determination, import inspection, testing, etc. For paper-based notifications, this is often achieved using certificates issued on special paper and sealed with an official government or departmental stamp. In e-notification systems, this is handled through the integration of data handling systems with their respective security protection.

Data must be verified at all stages of the system. If an e-notification is based on an analytical certificate (as when it is tested to ascertain the presence of a microbial pathogen), it is important that the data are verified before being entered into the system. Moreover, checks must be in place to ensure that test results are not modified once entered – unless new results become available and/or errors in data entry are detected. If any changes are made, the system should record when and why any modifications were made, and by whom. The use of a secure system requiring a secure login for all users is a minimum requirement in this respect.

Actions taken by the responsible authority in response to a notification should also be recorded: whether the product is rejected, recalled or withdrawn (when, where, and how much); if a risk assessment and/or further tests are undertaken, and the product is eventually released, etc. Follow-up action(s) by the respective food business and/or public authorities should also be recorded. The notification record should therefore be updated on an ongoing basis until the 'case' is closed. In this way, it will ultimately provide a full record over time of the reason for the rejection, the subsequent actions taken, and their consequences.

3.7 INTERNATIONAL EXCHANGE OF INFORMATION ON NOTIFICATIONS

While the primary focus of most e-notification systems is the issuance and distribution of notifications to national stakeholders, it is vital that notifications are passed on internationally in instances where food products have been implicated in an alert and exported. For this purpose, the International Food Safety Authorities Network (INFOSAN) has established Focal Points and Emergency Contact Points which serve as vectors of communication (FAO, 2020b). The INFOSAN Secretariat also publishes details of food safety incidents that involve foods in international trade. A system should therefore be in place for the routine communication of notifications where other countries might be impacted. In most cases, such communications happen by email. The analysis of data extracted from e-notification portals also provides valuable information on regional or global food safety issues to international organizations, academia and the private sector, based on which they can define new working areas and provide support.



CHAPTER 4

ENABLING DIGITALIZATION

4.1 ACCESS TO THE INTERNET

Access to the internet is a key requisite for the effective operation of an e-notification system in three respects:

- > The gathering and distribution of information is required to determine whether a notification is needed; it often originates from separate institutional authorities and must be transferred between government and food businesses via electronic means, including email.
- > To communicate with host servers, backup servers and other remote peripheral systems.
- > To distribute notifications to public authorities, food businesses and/or consumers, nationally and internationally, through email and web-based platforms, etc.

Ideally, where reliable internet access is the norm, the entire system, including its peripheral elements, can be based exclusively on internet access. Messages can then be sent to authorized devices via email or push notifications. However, this may not be the case everywhere; provisions should therefore be made for alternative communication pathways, as appropriate and necessary, whether via traditional SMS or other messaging services, telephone calls or even postal services.

4.2 DATA STORAGE AND FLOW

All data should be stored on a central server with regular – and ideally off-site – backup. The latter could be achieved through automatic backups to decentralized cloud storage systems. Records of previous data should be kept for an appropriate length of time. Any backups also need to be traceable in order to avoid data discrepancies. Finally, it is essential that the system track any changes to data at the user level.



CHAPTER 5

SYSTEM INFRASTRUCTURE

5.1 INFORMATION TECHNOLOGY

The use of Information technology (IT) is essential to the operation of e-notification systems. As such, these require the necessary minimum hardware and software as well as staff with the knowledge of how to operate and maintain them. Details relating to hardware, software, security, and maintenance can be found in Annex 4.

5.2 HUMAN RESOURCES

The human resource requirements of an e-notification system fall into two broad categories. First, the determination of whether a notification is required: this involves personnel with technical expertise in the respective area of food control; it is essentially a risk assessment process. Second, the operation and maintenance of the required IT, as outlined above, which involves the processing of data, the issuance and distribution of e-notifications, etc. In addition, personnel are required for the overall management of the e-notification system and the coordination of its constituent tasks, especially where these are undertaken across multiple institutional entities.

It is crucial that all personnel involved with the e-notification system are aware of the different teams' tasks and responsibilities, as well as the interconnections and interdependencies between them. Furthermore, personnel in all the government units that contribute data to and/or access the system need to be informed about how it operates.

All staff at the national, regional, and local level should be proficient in their work with the e-notification system. This includes the competent authorities, and the authority or body to whom authority is delegated, as well as IT staff. To this end, regular training needs to be conducted, ideally concluding with an assessment. E-Learning courses can be developed for this purpose.

5.3 FINANCIAL RESOURCES

It is essential that adequate resources are allocated to the establishment, operation and maintenance of all components of the e-notification system. This includes the cost of IT resources, personnel, engagement with stakeholders, etc.

Crucially, e-notification systems have ongoing capital expenses (CAPEX), most notably equipment and software, as well as operating expenses such as staff, training, utilities, office space, etc. Too often attention is given to the initial investment without due attention to ongoing costs. This belies the fact that both the initial investment and ongoing costs can be significant. Of course, ongoing costs can be offset, at least in part, by revenue streams generated by the e-notification system in the form of fees and/or fines for non-compliance. However, this assumes that such revenue flows back directly to the unit responsible for operating the e-notification system.

5.4 SYSTEM SUSTAINABILITY

Budgets must be allocated to each different system component, not only to ensure that the financial resources are available to implement the system, but also to maintain and operate it. A multi-year budget should be drawn up to ensure that the system can operate effectively and efficiently over time.

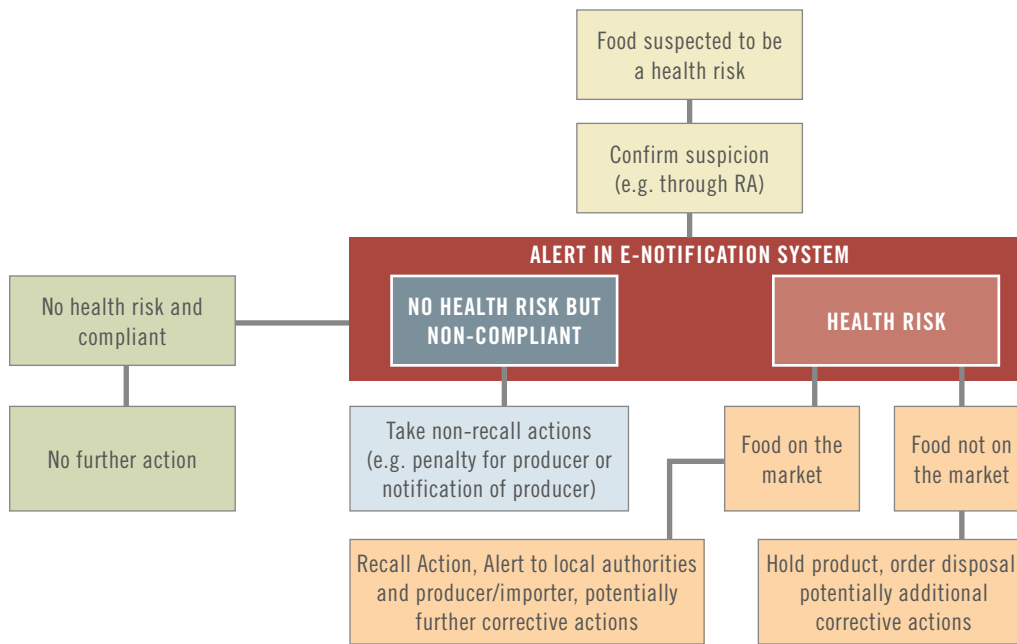
To assess the system's correct and effective functioning, both the system itself and its processes must be verified on a recurring basis; this is essential to identifying potential shortcomings and gaps. Any such gaps or shortcomings should then be remedied. Ideally a standard operating procedure (SOP) should be in place for to facilitate the recurring verification and improvement process.

5.5 WORKFLOW

An effective e-notification system requires a coherent and widely understood workflow. The latter should be established and maintained so as to collect and process data, determine the need for a notification, and the issuance of notifications and their distribution. Ideally, this workflow should be defined through a SOP. Figure 5.1 and Figure 5.2 provide examples of workflows for e-notification systems.

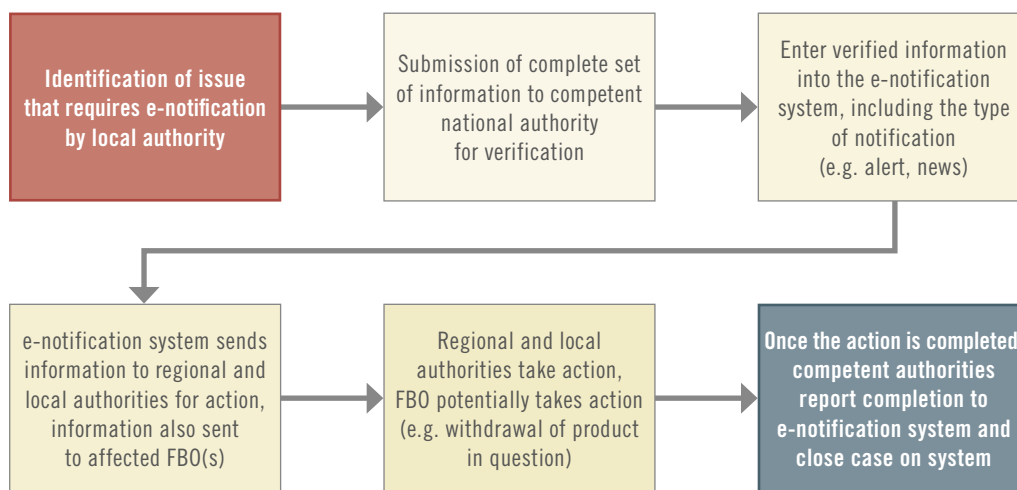
Clearly defined actions, depending on the type of non-compliance and the associated notification, are critical to the workflow. Clear definitions and courses of action need to be described, including the responsible competent authority, as well as the exact action taken, and how this action and its result should be entered into the e-notification system. Furthermore, clear instructions should be provided as to which competent authority can close a particular e-notification case, such as the central unit responsible for the e-notification system or the competent authority that was responsible for acting on a particular alert.

FIGURE 5.1 IDENTIFICATION OF INCIDENT THAT REQUIRES A NOTIFICATION



The workflow also needs to be defined for administrative purposes. As such, depending on the type of e-notification, the actions taken need to be described. The same is true for the responsible competent authority, with a description of how the exact action taken and the result are entered into the e-notification system. Finally, the competent authority assigned to close a particular e-notification case should also be defined. This can be done, for example, by the central unit responsible for the e-notification system or the competent authority.

FIGURE 5.2 SIMPLIFIED E-NOTIFICATION WORKFLOW



5.6 FUNCTIONAL REVIEW

The functionality and efficiency of the e-notification system should be reviewed on a regular basis. This can be done by soliciting input from people using the system, including IT staff and data curators. Alternatively, it may be obtained through regular joint meetings involving staff and/or stakeholders to receive input, and inform them of new features. The areas identified for improvement, as well as the actions taken as a result, should all be documented.

5.7 INTERCONNECTION BETWEEN E-NOTIFICATION AND E-CERTIFICATION SYSTEMS

Where an *e-certification* system has been implemented for imports of food products, it should ideally be integrated with the *e-notification* system. Integrating the two not only increases efficiency, but can also facilitate the timely determination of whether imported foods comply with regulatory requirements. In addition, it ensures enforcement actions can be taken in the event of non-compliance (e.g. border rejections and recalls in the case of products that have already entered the market), and more robust product traceability.

A highly sophisticated system that may be relevant here is information management system for official controls (IMSOC), the European information management system for official controls. A single login enables users to access several information systems, including the European Union's e-certification system (TRACES-NT) and the iRASFF e-notification system (Figure 5.3). Figure 5.4 shows how the information flows through this system and how the data are evaluated for predictive analysis. This being said, the systems are not yet fully integrated and data exchange is largely manual.

FIGURE 5.3 LINKS BETWEEN E-NOTIFICATION AND E-CERTIFICATION SYSTEMS IN THE EUROPEAN UNION

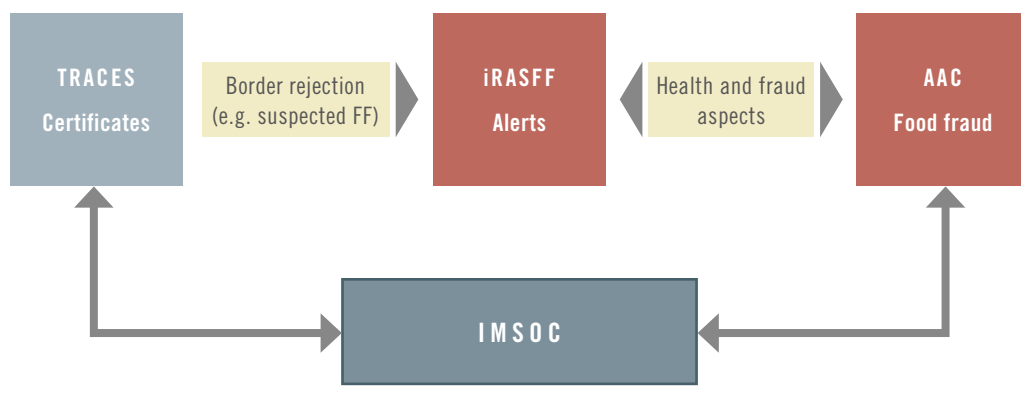
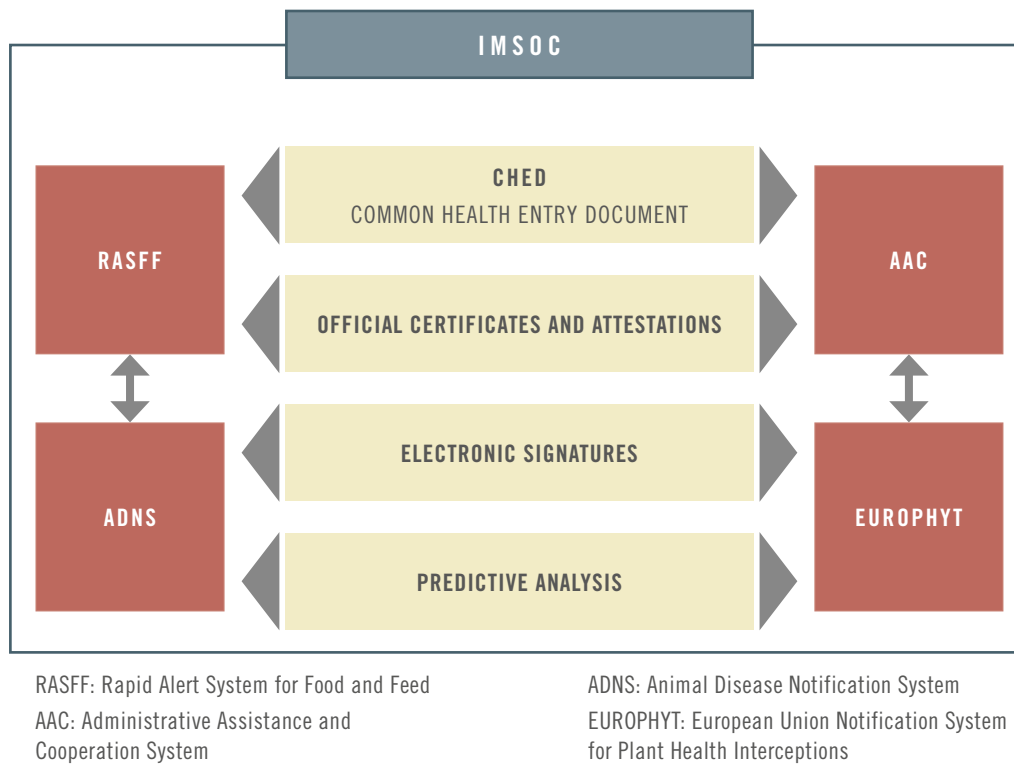


FIGURE 5.4 EXCHANGE OF INFORMATION BETWEEN E-CERTIFICATION AND E-NOTIFICATION SYSTEMS IN THE EUROPEAN UNION, AND THE EVALUATION OF DATA FOR PREDICTIVE ANALYSIS



While it may not be possible to achieve the full integration of e-notification and e-certification systems in every country – especially those with scarcer resources, and/or less well-developed public institutions – it is important that these systems follow common standards for information exchange. The common format of XML should therefore be used, for which UNECE provides the current standard (D21A). Further information regarding XML naming and design rules can be found in the XML Naming and Design Rules Technical Specification. For example, fields covering the manufacturer, country of origin and product description should have the same names and follow the guidelines for official certificate formats (CAC/GL 38–2005) (see Section 3).



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CHAPTER 6

MAKING A BUSINESS CASE FOR AN E-NOTIFICATION SYSTEM

6.1 THE NEED FOR A BUSINESS CASE

The implementation of an e-notification system and/or upgrade of an existing system inevitably requires technical, human, and financial resources, as outlined in Section 5.2. Depending on the current state of the notification system (if one exists at all), the resource requirements can be significant; this often demands a reasoned case to be made to those responsible for authorizing the required budget. In many cases, these officials may know little about the nature, functions and/or impacts of a food control e-notification system. What is more, they will likely be presented with competing requests for resources that may seem just as important, if not more so. It is therefore vital that any request for resources be accompanied by a coherent and reasoned business case for a food control e-notification system. Above all, its arguments should be easily understood by officials with little or no knowledge of the nature of food controls, or e-notification systems specifically.

6.2 CONTENT OF THE BUSINESS CASE

The business case for a new or enhanced food control e-notification system must lay out the required resources to upgrade such a system, operate it over time, and update it regularly in response to changes in requirements. It should also highlight the benefits that the system will bring, both in terms of the efficacy of food control and the impact on public health and food business performance. Ideally, the latter should include estimates of the impacts from comparable jurisdictions. Above all, as outlined above, it should be easily understandable to non-technical specialists.

6.2.1 RESOURCE REQUIREMENTS

The business case should outline the fixed resources required to implement or enhance the food control e-notification system and its associated costs. This will include IT infrastructure (including hardware and software), physical space

requirements and/or upgrades, and upgrades to internet and/or utility connections. Additional requirements may include staff training, changes in work procedures, etc.

The ongoing operating costs should cover staffing requirements, including additional staff and/or staff reallocated from other tasks, utility costs, equipment maintenance, etc. The business case should include an appropriate time horizon for these costs, depending on normal budgetary cycles, but should certainly cover multiple years.

6.2.2 FOOD CONTROL IMPACTS

The role and contribution of the e-notification system to the overall efficacy of food controls needs to be clearly articulated, in language that a non-food safety specialist can understand. Aspects to be considered might include:

- > levels of food-borne disease;
- > levels of food adulteration;
- > impacts on the broader dimensions of food quality;
- > impacts on consumer trust and confidence in food supply, especially in the context of prevailing consumer concerns about food safety, quality and/or adulteration; and
- > timelier prevention by food consumers, for example, in response to allergens in food.

Efforts could be made to quantify these impacts and/or to attach an economic value to them. Devising reliable estimates is not an easy task however, even in industrialized countries where the necessary data tend to be more available. As such, a reasonable alternative is to provide a broad indication of the likelihood and scale of impacts, with illustrative real-life case studies drawn from local contexts. These might include instances where more rapid information on food safety problems could be achieved through an e-notification system; or where such a system may bring about a more rapid response in terms of product recall, and/or actions to be taken by exporting businesses.

6.2.3 ECONOMIC AND BUSINESS IMPACTS

The main economic impact of a food control e-notification system, beyond improvements to food safety and/or quality (see above), is to reduce the costs associated with instances of non-compliance with regulatory food control requirements. This can include:

- > More timely notification of non-compliance by food businesses, especially where these might require a recall, thus leading to reduced market-level impacts in terms of the scale of any recall or declines in food sales, etc.
- > Reduced administrative costs for businesses when notifying non-compliance to regulatory authorities.

- > More timely notification of failures in food control to food businesses, thus enabling timelier prevention by other businesses.

It is reasonable to expect that businesses could make significant savings as a result of quicker notification of non-compliance with regulatory food controls. However, devising estimates of such savings is not easy, especially as they are likely to be highly context-specific. The main objective in the business case should therefore be to highlight the significant benefits in terms of reduced business costs.



ANNEX 1

CASE STUDIES

A1.1 FOOD CONTROL NOTIFICATION SYSTEM IN THE EUROPEAN UNION: RASFF

A1.1.1 *Overview of system*

The Rapid Alert System for Food and Feed (RASFF) was originally established as an informal agreement in 1979 between a small number of European countries: Belgium, Denmark, France, Germany and Ireland. Initial communication happened through telex and fax. In 2000, the RASFF system was upgraded to make use of the internet and e-mail. In 2009 the system was adapted to run on PCs, and since 2011 it has operated as a collaborative online platform. All European Union Member States have been part of the online platform since 2014 (European Commission, 2009). In 2019, the system reported 4 118 notifications, of which 1 175 were alerts. Most hazards (> 1000) were related to pathogenic microorganisms, followed by almost 600 mycotoxin-related cases (European Commission, 2019c).

A1.1.2 *Legal framework*

The RASFF is extensively described on the European Commission's website for the system. The legal basis for RASFF comes from several European regulations. In particular, European Regulation 178/2002 (European Commission, 2002), which also established the European Food Safety Authority (EFSA), gives legal provision for the RASFF in Article 50, Article 51 and Article 52. In the original regulation, food was the only commodity for which alerts were issued. This changed with Regulation 183/2005 (Article 29) (European Commission, 2005), which added animal feed to the notification commodities. Regulation 882/2004 (Article 19) (European Commission, 2004) subsequently added border rejections to the RASFF. The latter regulation is no longer in force, however, having been replaced by the Official Control Regulation 2017/625 (European Commission, 2017).

As well as the regulations that established the legal framework for RASFF, there is also an implementing regulation (16/2011) (European Commission, 2011). The latter defines the duties of Member States, the role of the European Commission, and the way information must be exchanged (Article 2). In addition, it states how the general public shall be informed of risks to human health, based on Article 10 of the European Regulation (178/2002). This implementing regulation has been superseded by Regulation 2019/1715 (European Commission, 2019a), which lays down rules for the functioning of the information management system for official control and its system components ('the IMSOC Regulation').

The latter connects all relevant information systems, including e-certification systems and e-notification systems. The RASFF is specifically referred to in Article 1 (Subject Matter and Scope), Article 2 (Definitions), Article 3 (IMSOC components), Article 6 (Links between Components), and Chapter 3, Section 1 (iRASFF), which covers Articles 12–28. It is worth noting that data for RASFF and AAC are entered through an electronic system called iRASFF, which implements the RASFF and AAC procedures described in Article 50 of Regulation (EC) No 178/2002 and Articles 102–108 of Regulation (EU) 2017/625 respectively.

Implementing regulation 2019/1715 also defines *who* has access to the RASSF system and *how* the public is informed. Article 23 states that all alert and cooperation network members shall have access to alerts, information, news or border rejection notifications. This article also restricts access to non-compliance and food fraud notification to specific groups. As such, only the notifying, notified and requested alert and cooperation network members shall have access to non-compliance notifications. Furthermore, only the notifying, notified and requested contact points of the food fraud network shall have access to food fraud notifications.

The Implementing regulation 2019/1715 also requires that notifications are verified before publication. This is the responsibility of the Commission contact point. After successful verification, and in accordance with Paragraph 1 or 2, a notification may publish a summary of alert, information, border rejection and non-compliance notifications. It will include information on the classification and status of the notification, the product and risk(s) identified, the country of origin, the countries in which the product was distributed, the notifying network member, the basis for the notification and the measures taken. The regulation also lays down that the Commission shall publish an annual report on the notifications submitted in iRASFF.

Competent authorities can access RASFF by using a restricted page (European Commission, 2021a), and once logged in, detailed information on the notification can be accessed, including the manufacturer, shipment information, laboratory reports, and further details. For consumers, only a page showing a summary of the information (e.g. the type of product and country of origin) is provided (European Commission, 2021b). Shipment information, manufacturer and laboratory certificates cannot be accessed by consumers: it is up to the competent national authorities to publish the manufacturers or importers names in the event of a public product recall.

A1.1.3 *Standard operating procedures*

In addition to the regulations listed above, standard operating procedures (SOPs) are provided, which set out different operative aspects and tasks of competent authorities and contact points. These non-regulatory documents include:

- > best practice for Single Contact Points;
- > criteria to determine when a notification to the RASFF is required;

- > instructions on how to prepare an original notification;
- > instructions on how to prepare follow-up notifications;
- > instructions on how to transmit notifications using the RASFF procedure to the European Commission contact Point (ECCP);
- > the tasks of the ECCP;
- > the distribution of RASFF notifications received from the ECCP;
- > assessing the notification received from ECCP;
- > consulting iRASFF notifications – arrangements for personal data protection; and
- > confidentiality rules for iRASFF.

The SOPs are laid down in the European Commission document *Standard operating procedures of the Rapid Alert System for Food and Feed (RASFF) and the Administrative Assistance and Cooperation (AAC) networks* (European Commission, 2019b).

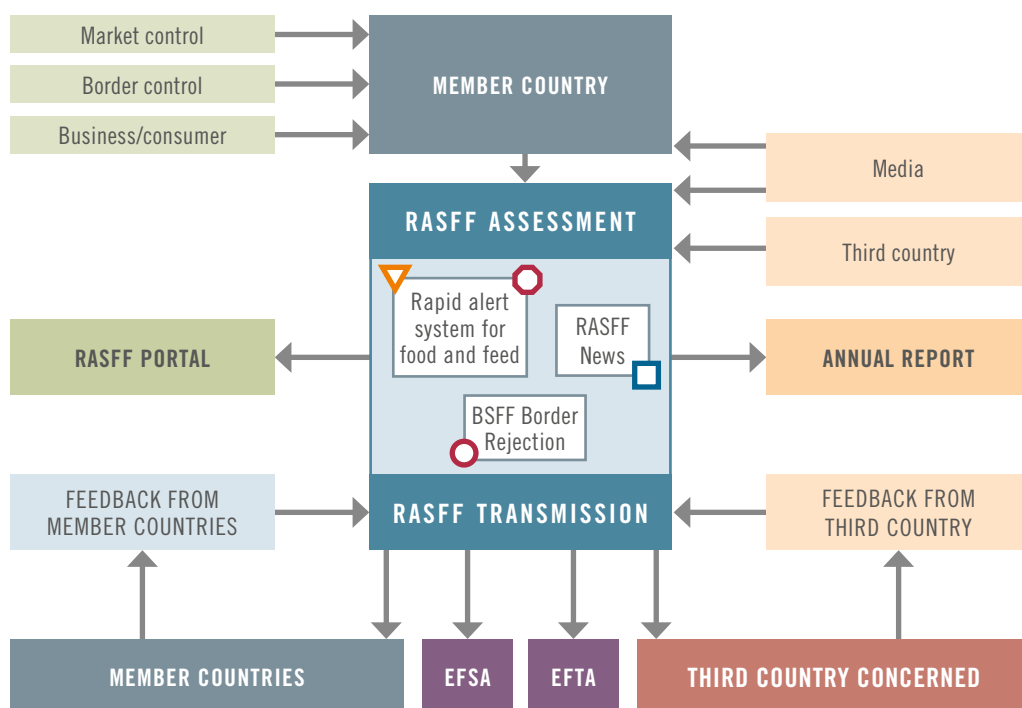
These SOPs can also serve as guidance for other countries that seek to establish an e-notification system.

The notification pathway is defined in Regulation 2019/1715, whereby each country must define a single contact point and communicate this to the European Commission (Article 13). This single point of contact is responsible for:

- > Setting up effective arrangements for the smooth exchange of relevant information with all relevant competent authorities within its jurisdiction; allowing the immediate transmission of notifications, requests or responses to the competent authorities for appropriate action; and maintaining the notifications, requests or responses in good order.
- > Determining its roles and responsibilities and those of the relevant competent authorities within its jurisdiction as regards preparing and transmitting notifications, requests and responses; and assessing and distributing notifications, requests and responses from other members of the alert and cooperation network.

A schematic information flow is shown in **Figure A1.1**

FIGURE A1.1 SCHEMATIC REPRESENTATION OF THE INFORMATION FLOW OF THE RASFF



Source: European Commission, 2014. European Commission, Directorate-General for Health and Food Safety, *RASFF annual report 2014*, Publications Office, 2015, <https://data.europa.eu/doi/10.2875/50860>

A1.1.3.1 Types of notifications

Extensive information on how RASFF works, its legal basis and the types of alert notifications can be found on the European Commission website (European Commission, 2021c; European Commission, 2021d; European Commission, 2021e)

The RASFF notifications usually report on risks identified in food, feed or food contact materials that are placed on the market in the notifying country or detained at an European Union point of entry. The notifying country reports on the risks it has identified, the product, its traceability, and the measures it has taken. According to the seriousness of the risks identified, and the distribution of the product on the market, the RASFF notification is classified after verification by the Commission contact point – either as an alert, information, or a border rejection notification. The Commission contact point then transmits it to all network members.

As outlined below, the system allows for different types of notifications (European Commission, 2021d).

A1.1.3.2 Alert notifications

An “alert notification” or “alert” is sent when a food, feed or food contact material that presents a serious risk is on the market, and when rapid action is or might be required in a country other than the notifying country. Alerts are triggered by the

network member that detects the problem and has initiated the relevant measures, such as withdrawal or recall. The notification aims at giving all the members of the network the information to verify whether the concerned product is on their market so that they can take the necessary measures. Products subject to an alert notification have been withdrawn or are in the process of being withdrawn from the market. Member States have their own mechanisms to carry out such actions, including the provision of detailed information through the media if necessary.

Article 17 of Implementing regulation 2019/1715 sets out that:

- > RASFF network contact points shall submit alert notifications to the Commission contact point without undue delay and in any event within 48 hours of the risk being reported to them.
- > Alert notifications shall include all available information required by Article 16(1) and any information on the risk and the product from which it derives. However, the fact that not all relevant information has been collected shall not unduly delay transmission of alert notifications.
- > The Commission contact point shall verify alert notifications and transmit them to the alert and cooperation network contact points within 24 hours of receiving them.
- > Outside Commission office hours, RASFF network contact points shall announce the transmission of an alert notification – or follow up an alert notification – by telephone call, using the Commission contact point’s emergency telephone number and specifying which RASFF network members’ countries are concerned. Similarly, the Commission contact point shall inform the RASFF network contact points concerned by calling their emergency phone numbers.

A1.1.3.3 Information notifications

An “information notification” concerns a food, feed, or food contact material for which a risk has been identified that does not require rapid action, either because the risk is not considered serious, or the product is not on the market at the time of notification.

Article 18 of Regulation 2019/1715 sets out that:

- > RASFF network contact points shall submit information notifications to the Commission contact point without undue delay.
- > Information notifications shall include all available information required by Article 16(1), together with any information on the risk and the product from which it derives.
- > The Commission contact point shall verify information notifications and transmit them to the alert and cooperation network contact points on receiving them, without undue delay.

A1.1.3.4 Border rejection notification

A “border rejection notification” concerns a consignment of food, feed or food contact material that was refused entry into the Community for the reason of a risk to human health and to animal health or to the environment if it concerns feed.

Article 20 of implementation regulation 2019/1715 sets out that:

- > RASFF network contact points shall transmit border rejection notifications to the alert and cooperation network contact points without undue delay.
- > Border rejection notifications shall include all information required by Article 16(1) and any information on the risk and the product from which it derives.
- > The information referred to in Paragraph 2 shall be transmitted through TRACES to all border control posts.
- > The Commission contact point shall verify each border rejection notification after it has been transmitted.

A1.1.3.5 Non-compliance notification

Non-compliance notifications are transmitted through the AAC system.

Article 16 of implementation regulation 2019/1715 sets out that:

- > Alert and cooperation network contact points shall exchange non-compliance notifications without undue delay. These should include, at the very least, the following:
 - > the name of the competent authority dealing with the notification, if different from the contact point;
 - > a description of the possible non-compliance;
 - > where possible, identification of the operators associated with the possible non-compliance;
 - > details of the animals or goods involved;
 - > any information concerning suspected risks; and
 - > an indication as to whether the notification relates to a possible instance of non-compliance perpetrated through fraudulent practices.
- > The Commission contact point shall verify each non-compliance notification after it has been exchanged, without undue delay.

A1.1.3.6 Food fraud notifications

Since the official control regulation (2017/625) has a particular focus on food fraud, the IMSOC system provides, within RASFF and AAC, a specific type of notification for food fraud.

Article 21 of implementation regulation 2019/1715 sets out that:

- > Food fraud network contact points shall exchange food fraud notifications including the following, at the very least:
 - > all the information required by Article 16(1);
 - > a description of the suspected fraudulent practice;
 - > where possible, identification of the operators involved;
 - > information as to whether there are ongoing police or judicial investigations into the suspected fraudulent practice; and
 - > information on any instruction from the police or judiciary authority as soon as it is available and can be disclosed.
- > Food fraud network contact points shall communicate any information concerning health risks to their RASFF network contact point without undue delay.
- > The Commission contact point shall verify each food fraud notification after it has been exchanged, without undue delay

A1.1.3.7 Follow-up notifications

An RASFF notification referring to one or more consignments of a food, feed or food contact material not previously notified to the RASFF is considered an ‘original’ notification, classified as an alert, information, or border rejection notification. As a response to such notifications, members of the network can transmit “follow-up notifications”. These refer to the same consignments and add information to the original notification such as information on hazards, product traceability or measures taken.

Article 21 of implementation regulation 2019/1715 sets out the following for follow-up notifications:

- > Where an alert and cooperation network member have additional information relating to an original notification, the contact point(s) concerned shall immediately transmit a follow-up notification to that network.
- > Where a contact point referred to in paragraph 1 has requested follow-up information relating to an original notification, the alert and cooperation network shall be provided with such information to the extent possible and without undue delay.
- > Where an RASFF network member acts on receipt of an original notification in accordance with Article 50(5) of Regulation (EC) No 178/2002, its contact point shall immediately transmit a detailed follow-up notification to the alert and cooperation network.
- > Where the action referred to in paragraph 3 consists of detaining a product and returning to a dispatcher in the country of another RASFF network member:

- > The network member taking the action shall provide relevant information about the returned product in a follow-up notification, unless that information was already included in full in the original notification.
- > The other network member shall provide information in a follow-up notification on the action taken on the returned product.
- > By way of derogation from paragraph 1, where a follow-up notification changes the classification of an original notification to an alert or an information notification, the alert and cooperation network member shall submit it to the Commission contact point for verification. It shall then be transmitted to the alert and cooperation network contact points within the delays set out in Article 17 or Article 18.

A1.1.4 *Data collection*

If the surveillance authorities of a federal state determine that certain food, food contact materials or feed pose a risk to human health, they inform the designated national contact point electronically. The designated national contact point verifies all incoming notifications for completeness and accuracy and forwards the notifications to the European Commission (upstream procedure). At the beginning of 2014, the email-based notification system was transformed into the online RASFF portal, iRASFF. The European Commission, which is responsible for managing the system, provides the technological platform for the portal. The local, regional and national competent food safety authorities, as well as the border inspection posts and competent authorities of the other network members, all have access to iRASFF.

As an online portal, iRASFF has many advantages. For example, it is available anywhere with internet access. Certain information, such as laboratory addresses and relevant legislation, are stored in a database and therefore don't have to be re-entered each time they appear. Information on the concerned product is entered into the system through a user interface. The notifications contain information on the type of product, its origin, the different stations in the food chain, the distribution, the hazard, and the measures taken. The notifications are usually accompanied by further documents such as analytical reports, official reports, delivery notes or distribution lists, to facilitate the identification of the product and to assure the certainty of the measures. Notifications are also submitted to the European Commission through the portal. Notifications from other EU Member States are made available to all members of the network by the European Commission (European Commission, 2021f). The competent national authority forwards these notifications to all regional contact points and other authorities (downstream procedure).

In the case of Germany, for example, the core content of the notifications is summarized by the Federal Office of Consumer Protection and Food Safety (BVL) to simplify the work of the federal state authorities. Specific references are used in the subject to classify the notifications. These references help the federal state authorities to identify whether their federal state is involved, whether a request was made, whether it concerns a feed notification etc. The main recipients of the

downstream notifications are the federal state competent authorities responsible for the surveillance of food and feed and veterinary surveillance. The individual notifications are forwarded to the Federal Ministry of Food and Agriculture and other federal authorities, such as the Federal Institute for Risk Assessment, for information only. Special requests to the federal states from the Commission and RASFF member countries, and vice versa, are translated and forwarded by the BVL accordingly. If the BVL receives notifications that contain information on previously unknown risks to human health, a risk assessment is requested at the Federal Institute for Risk Assessment (BfR). Interested consumers and associations can retrieve the daily overview of the anonymized notifications from the rapid alert system via the BVL website.

A1.1.4.1 Data analysis

While the notification of current incidents is important, tools such as RASFF can be useful for shaping Member States' monitoring plans, identifying high-risk food groups, or even countries from which they originate. Numerous statistical tools have been developed, specifically for the analysis of RASFF data. In 2010, the European Food Safety Authority (EFSA) asked its Emerging Risks Unit to develop a system for the routine monitoring of data from the Rapid Alert System on Food and Feed (RASFF); its main objective was to detect potentially relevant patterns of notifications and a timely reporting.

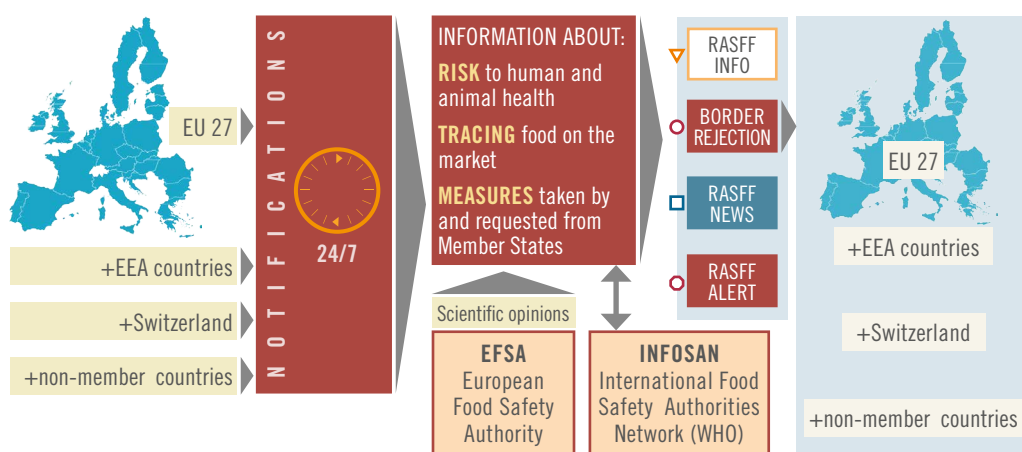
A1.1.5 *Utility of the system*

Since 2014, the RASFF system has been used by all European Union Member States and numerous third countries. Figure A1.2 shows the information flow and process of notifications. Figure A1.3 shows the case study for an outbreak of *E. coli* O104:H4, which caused 47 casualties in Germany (RASFF Alert Notification 2011.0842). The full report on traceability can be accessed on the EFSA website (EFSA, 2016).

The process starts with a member notifying the RASFF network of the existence of a serious, direct or indirect risk to public health linked to food or feed. This information reaches the European Commission (as the manager of the system), which in turn verifies the notification and immediately transmits it to the other members of the network. A common template is used to provide all the relevant and useful information, including product identification, hazard(s) found, measure(s) taken and information on tracing the product. Upon receiving the information, other member countries check if they are concerned. If the product is on their market, they can trace it using the information in the notification. They report back on what they have found and what measures they have taken for the transparent and mutual information of all RASFF members. In the case of products from the European Union, the Member State from which the product originates also reports on the outcome of its investigations regarding the origin, distribution and cause of the problem identified. This allows other member countries to take rapid action

when needed. In addition, following a notification by a member of RASFF, the system allows member countries to request clarification regarding the timing, scope or nature of the notification. For instance, when there is evidence that an incident could have been reported earlier, it is possible to ask the notifying country for an explanation.

FIGURE A1.2 HOW RASFF WORKS

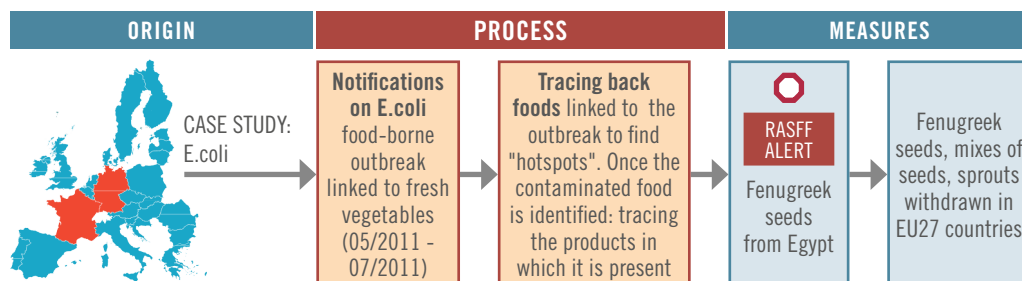


Source: European Commission, 2021. European Commission, Directorate-General for Health and Food Safety, *How RASFF does work*. 2021. https://ec.europa.eu/food/safety/rasff-food-and-feed-safety-alerts/how-does-rasff-work_en

A1.1.6 Conclusions

The IMSOC system that also integrates the iRASFF is a very effective tool for tracing products from exporting countries and throughout the European Union, as well as rapidly alerting the relevant competent authorities of non-compliances and health risks. However, its level of complexity makes it difficult to implement in small and/or low- and middle-income countries. Despite this, the existing SOPs are useful and can easily be adapted for such countries. One example is Chile's implementation of the RIAL system several years ago, which is a scaled-down version of the RASFF. The latter thus provides an excellent template and documentation for the implementation of similar systems in other countries.

FIGURE A1.3 EXAMPLE CASE STUDY



The IMSOC system has several advantages, but also some disadvantages. Table I.1 shows the key aspects. The major advantages are that all relevant systems, including the different e-certification systems (TRACES-NT with Phyto, Import, Catch, Certificate of Inspection (COI), Forest Law Enforcement Governance and Trade, the different certificates, documents and features (CHEDs) (-A, -D-P, -PP)) and the e-notification systems (iRASFF with RASFF and AAC) are linked. Products can therefore be easily traced across the systems by all European Member States (and permitted third countries), which makes the system very efficient. The login system with multifactor authentication is also highly secure. On the other hand, its complexity and sophistication come at a cost not only for its implementation, but also for the equipment maintenance and HR required to operate and maintain it. These costs are likely to be difficult to bear for low- and middle-income countries. On the other hand, key elements such as classifications, types of notifications and the language used for the exchange of information between systems, can be used as a template for scaled-down versions that are as efficient but less costly.

TABLE A1.1 ADVANTAGES AND DISADVANTAGES OF IMSOC

ADVANTAGES	DISADVANTAGES
Sophisticated system	High complexity
Highly secure	Expensive to implement
Efficient	At regional (sub-federal state) level only via email
Links all e-certification and e-notification systems	

A1.2 FOOD CONTROL NOTIFICATION SYSTEM IN CHILE: RIAL

A1.2.1 *Overview of system*

The Chilean Food Alerts and Information Network is a system that allows the rapid exchange of information on the safety of food and animal feed between participating public services. It concerns both products on the domestic market and exported from Chile. The system was created to comply with one of the objectives set forth in the National Food Safety Policy of May 2009. Objective 3 of this policy states: “Modify food control and surveillance systems in such a way that they are more preventive and integrated and with greater response capacity in the face of food crises” (ACHIPIA, 2009).

In response, efforts were made to develop an integrated food safety information system and modernize the existing system of food alerts. In 2010, the RIAL system was launched.

Initially, notifications were sent through emails to the contact points that had email accounts exclusively for this purpose. An Excel form was used to prepare the notifications. Since March 2013, the RIAL has used a computer tool that works in a collaborative web-based environment, and which allows users to manage notifications in a simple way. The use of this platform is restricted to contact points and administrators. The tool offers a series of advantages by allowing the centralized processing and storage of information, the monitoring of system management, referenced document organization, and the automatic generation of reports. In 2016, the PORTAL RIAL was enabled. This is a web-based, public access database from which general information about notifications can be obtained.

The basic structure of the RIAL system was based on the European Union RASFF system.

A1.2.2 Legal framework

The legal authority for the establishment of the RIAL comes from Supreme Decree No. 162 of 12-06-2010 of the Ministry of the General Secretariat of the Presidency, which establishes the Chilean Agency for Food Quality and Safety (ACHIPIA). Specifically, one of the responsibilities of ACHIPIA is to:

Propose a food information and alerts system that integrates the different sources of information about food safety events to provide the State with a tool that allows it to respond with agility to risk situations and that it also allows an effective evaluation of food control and hygiene programs, to improve the management of the competent services and decision-making in public policies. All the services of the State will be obliged to provide the information, within the scope of their respective competences, that in this regard is officially requested by the Agency (Ministeria Secretaria de la Presidencia, 2011).

A1.2.3 System structure and operating procedure

The RIAL system is managed by ACHIPIA, which is responsible for the general coordination of the system and the maintenance of the computer tool. In turn, the agencies responsible for food safety control and surveillance programmes for particular commodities are responsible for issuing notifications through the system and ensuring that its information is kept up to date. These agencies are:

- > National Fisheries Service (SERNAPESCA)
- > Agricultural and Livestock Service (SAG)
- > Ministry of Health (MINSAL).

A1.2.4 *Types of notifications*

A notification is issued when the presence of a hazard in a food or feed that violates national regulations or regulations in an export market has been detected by a competent authority. In such cases, the competent authority submits the corresponding notification. Notifications are classified into three categories, depending on the risk and the availability of the food to consumers:

- > Alert: an event in which a hazard has been detected in a food that is present in the market and poses an immediate risk to the health of consumers.
- > Information: an event in which a hazard has been detected in a food, but which does not pose an immediate risk to the health of consumers or is not present in the market.
- > Rejection: an event in which the Chilean sanitary authority rejects the entry into the country of an imported food consignment for not complying with sanitary regulations.

Also classified in the last category are events in which the competent authority of a third country rejects the entry into its borders of a consignment of food exported from Chile for not complying with the food safety regulations of the destination country. Export rejections are obtained from different e-notification systems available in the main Chilean food destination markets, including the European Union RASFF system, the Food Import Rejection system of the US Food and Drugs Administration (USFDA), etc.

Since 2013 ACHIPIA publishes an annual report that contains an analysis of the notifications, as well as the main hazard and foods identified.

A1.2.5 *Utility of the system*

The system is primarily used by the competent authorities to track issues in Chile, but also to track Chilean products in other alert systems, e.g. the RASFF system. The annual report is in demand in the Chilean food industry as tool to identify product issues.

The RIAL system provides data that has supported the assessment and management of food safety risks in Chile. It is worth noting that the system probably does not reflect the notifications corresponding to rejections of food exported from Chile from *all* the countries to which Chile exports, since not all countries have e-notification systems. This being said, the RIAL system does not currently include data on rejections of agrifood imports into Chile.

A1.2.6 *Conclusions*

While the Chilean system does not offer the entire functionality and connectivity of systems like RASFF, it has proven to be an invaluable tool to identify issues and the measures to be taken.

TABLE A1.2 ADVANTAGES AND DISADVANTAGES OF RIAL

ADVANTAGES	DISADVANTAGES
Low complexity	No integration with import databases
Low implementation cost	No secure socket layer (SSL)
Covers national products notified in foreign alert systems	
Effective	

A1.3 FOOD CONTROL NOTIFICATION SYSTEM IN CANADA

A1.3.1 *Overview of system*

Canada’s e-notification system relates to recalls of food products that are on the Canadian market. This can include food products produced or manufactured in Canada, or those that have been imported from another country but permitted to be placed onto the market in Canada. The system is implemented and operated by the Canadian Food Inspection Agency (CFIA).

A1.3.2 *Legal framework*

The legal basis of Canada’s food recall and related e-notification system is provided by the Food and Drugs Act 1985. The power of the CFIA to require a recall is provided under the Canadian Food Inspection Agency Act 1987. The requirement for businesses to inform the CFIA when they recall a food product voluntarily is a relatively recent development under the Safe Food for Canadians Regulations 2019.

A1.3.3 *System structure and operating procedure*

The CFIA’s Office of Food Safety and Recall (OFSR) is responsible for the food recall process in Canada, and for issuing notifications where recalls occur. The OFSR is also the national contact point for national and international partners regarding food safety investigations and recalls. It is the Emergency Contact Point for Canada within the International Food Safety Authorities Network (INFOSAN).

The CFIA delegated responsibility for verifying industry compliance to its regional offices; the latter review legal food safety requirements, initiate control measures in response to food safety risks and undertake enforcement action in response to non-compliance. When a food safety incident occurs, or is suspected of having occurred, a file is established on the CFIA’s Incident Management System (IMS). This is an electronic system that records information, actions and decisions related to a food safety incident. This system is entirely based in Canada to comply with national privacy legislation.

A lead investigator is defined for each incident, who is responsible for determining whether the incident falls under the jurisdiction of the CFIA. They undertake an

initial assessment of whether it has the potential to present a risk to health and/or contravenes legal requirements. At this stage, the priority of the food safety incident is also determined.

Potential or confirmed high priority incidents are reported immediately to the respective regional recall coordinator, who in turn refers the incident to the OFSR. This occurs by email and/or telephone, with specific language employed to indicate the priority that has been attached to the incident. Through this process, the OFSR is alerted to the incident and refers to the file on the IMS.

The OFSR undertakes an investigation to verify whether a regulatory contravention and/or human health hazard exists in the implicated food, and the nature and extent of the problem. If an immediate risk is identified, a notification is issued immediately. In other cases, an investigation is undertaken to ascertain the nature and magnitude of the risk and the risk mitigation measures that are necessary. In turn, this process determines the need for the food recall and associated notification that will be issued:

- > Class I: There is a high risk that consuming the food may lead to serious health problems or death.
- > Class II: There is a moderate risk that consuming the food may lead to short-term or non-life-threatening health problems.
- > Class III: There is a low risk that consuming the food may result in any undesirable health problems. This class also includes food that do not pose a health risk, but do not comply with legislation.

Almost all recalls in Canada are voluntary, meaning that they are conducted by the responsible business with oversight from the CFIA. However, if a business is unable or refuses to conduct a voluntary food recall, the CFIA has the power to order a mandatory recall for all food that poses a health risk. Note that all recalls since 2007 have been instigated by businesses or have been implemented by businesses at the request of the CFIA. Since that time, the CFIA has therefore not had to demand that a business recall a food product.

When a food recall occurs, the CFIA automatically issues an e-notification. In the case of a Class I recall, the expectation is that it will occur within 24 hours of the need for the recall being determined. If a notification is to be issued, the officials responsible for external communication are informed by email. Notifications are issued using the following electronic means:

- > Alerts are published on the CFIA website.
- > Email alerts are issued. The public and interested parties can subscribe to alerts, both in general or those that relate to specific issues. Currently, there are around 75 000 subscribers for email alerts.
- > Notifications are available through the CFIA's recall and safety alert application (app), which is available for Apple, Android or Blackberry mobile devices. Note, however, that the app is not currently equipped for push notifications.

- > Notifications are published through the CFIA’s Facebook page and Twitter feed.
- > Notifications are published on the Government of Canada’s Healthy Canadians website.

Media channels are also informed via the Government of Canada’s news wire.

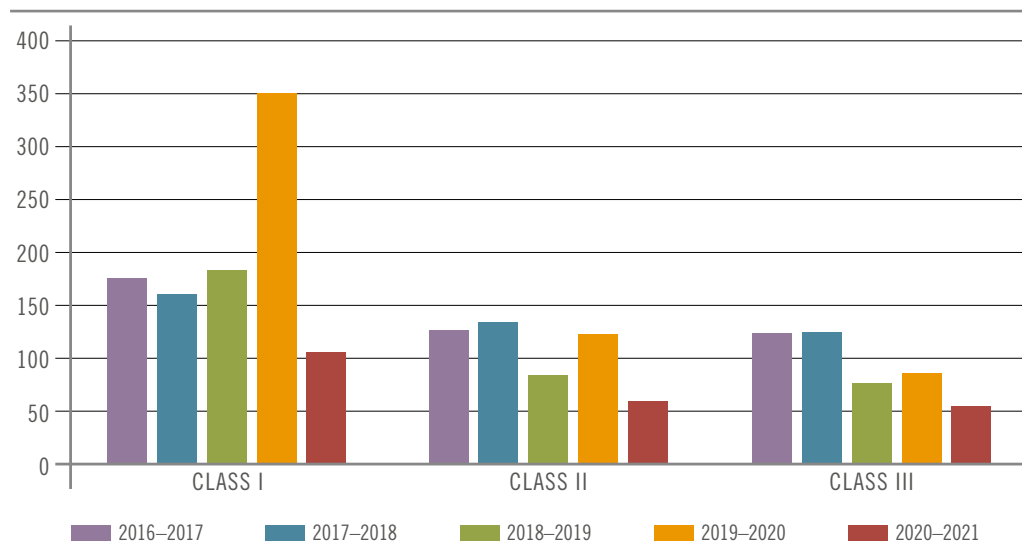
In instances where a recall involves a product exported from Canada and may have already reached another country, or where the implicated product has been imported from another country, the notification is emailed to that country’s Emergency Contact Point. The INFOSAN secretariat is also informed by email.

Having issued a recall, the CFIA undertakes a verification process to ascertain that a recall has indeed been performed, and whether there is a need for further action(s) and related additional notifications.

A1.3.4 *Utility of the system*

The CFIA’s food recall and e-notification system has operated successfully since at least 1998. The CFIA’s website provides records of notifications dating back to 2017. Figure A1.4. details the number of recall notifications over the period from 2016 to 2021.

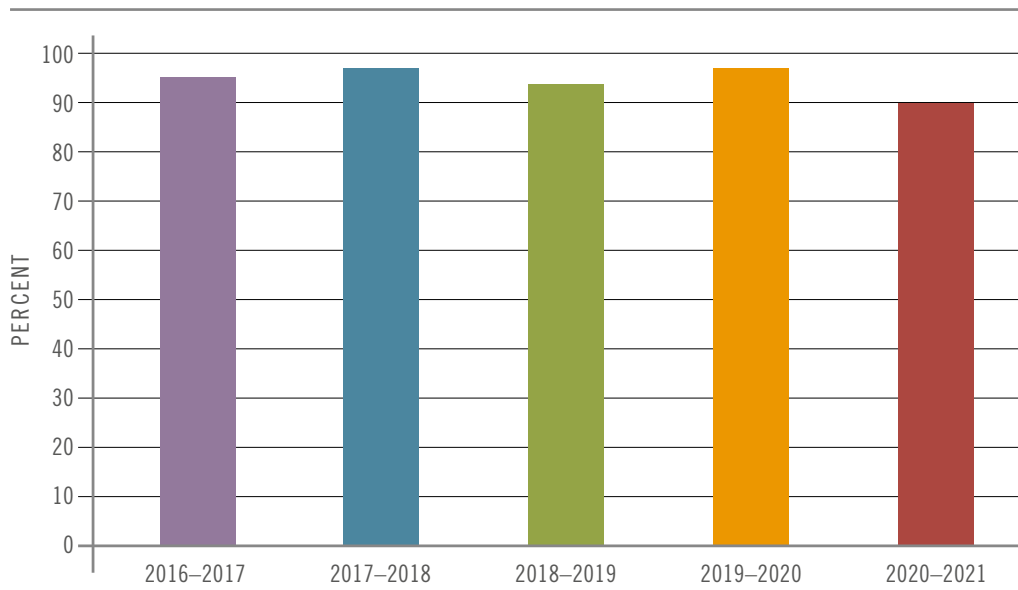
FIGURE A1.4 NUMBER OF RECALLS BY TYPE, 2016–2021



Source: CFIA, 2021. Government of Canada. *Food recall warnings and allergy alerts*. Government of Canada. <https://inspection.canada.ca/food-recall-warnings-and-allergy-alerts/eng/1351519587174/1351519588221?ay=2021&fr=0&fc=0&fd=0&ft=2>

The system is evidently efficient at issuing e-notifications in a timely manner, especially when these relate to immediate health risks for consumers. The performance standard that CFIA works to is for a Type-1 recall notification to be issued within 24 hours of the need for a notification being confirmed. Over the period from 2015 to 2020, at least 90 percent of Type-1 recalls were issued within this period (Figure A1.5).

FIGURE A1.5 PERCENTAGE OF TYPE-1 RECALL NOTIFICATIONS ISSUED WITHIN THE TARGET TIME PERIOD, 2015 TO 2020



Source: CFIA, 2021. Government of Canada. *Food recall warnings and allergy alerts*. Government of Canada.
<https://inspection.canada.ca/food-recall-warnings-and-allergy-alerts/eng/1351519587174/1351519588221?ay=2021&fr=0&fc=0&fd=0&ft=2>

The e-notification system operated by the CFIA makes use of a range of electronic means of disseminating notifications. A file is also issued within a central database (the IMS) and updated on an ongoing basis while a food safety incident is investigated, a recall is issued and the situation around this recall evolves and is monitored. However, the system is not fully automated. At certain stages of the recall and notification process, critical stages of communication are undertaken outside of the IMS system using manual methods such as email and telephone.

A1.3.5 *Conclusions*

The Canadian food recall e-notification system provides an example of a system that focuses on instances of non-compliance with regulatory requirements, and more general instances of food safety failures, entirely within the domestic sphere. This system does not therefore provide notifications of border rejections, although it does issue notifications in the event of non-compliance of imports, once these have been admitted to the Canadian market. It is a useful example of an e-notification system in a geographically large and dispersed country, but also one in which the food system is less complex than, for example, the European Union and/or the United States of America.

TABLE A1.3 ADVANTAGES AND DISADVANTAGES OF CFIA SYSTEM

ADVANTAGES	DISADVANTAGES
Focuses on domestic non-compliance and food safety failures	No integration with import databases
Low complexity	
Recall class categorization	
Email and social media dissemination	

A1.4 FOOD CONTROL NOTIFICATION SYSTEM IN JAPAN

A1.4.1 *Overview of system*

Article 27 of the Food Hygiene Act sets out that any person who intends to import food, additives, apparatus or containers and packaging, whether for marketing or business purposes, shall notify the Minister of Health, Labour and Welfare on a case-by-case basis. Article 30 (3) of the Act articulates that the Minister of Health, Labour and Welfare shall have food hygiene inspectors implement monitoring and guidance pertaining to the importing of food, additives, apparatus or containers and packaging, pursuant to the imported food monitoring and guidance plan.

A1.4.2 *Legal framework*

Article 63 of the act sets out that in order to prevent food safety hazards the Minister of Health, Labour and Welfare and a prefectural governor shall clarify the food safety hazards situation. They must do so by publicizing the name of the person who has violated the act and the contents of the violation, including the name of the food, and the name and address of its manufacturer on the MHLW imported food website. The information includes the disposal and withdrawal of the violated food, the cause of the violation, and what collective actions are to be taken.

A1.4.3 *System structure and operating procedure*

Food hygiene inspectors located in quarantine stations will carry out checks to ensure compliance with the act; this includes compliance with specifications and standards relevant to foods (hereinafter referred as “the standards”) in accordance with the provisions of Paragraph 1, Article 13 and Paragraph 1, Article 18. The checks are based on the import notification documents filed under Article 27, as well as inspections on the identity of actual goods by referring to the contents of import notification documents.

As soon as food hygiene inspectors find any non-compliance with any requirement established in the act, including the standards and specifications established based on Article 13, they must notify the Director of the Office of imported food safety, Food inspection and safety division, Department of environmental health and food safety, Ministry of Health, Labour and Welfare. This notification is carried out manually

by attaching the notification form to an email. The person in charge assembles all of the non-compliance notifications and develops the list of non-compliant food. This list is published on the MHLW website monthly, and includes:

- > name of the item
- > the name of the exporting country
- > name of the manufacturer
- > name of shipper
- > article of the Food Hygiene Act with non-compliance
- > contents of non-compliance
- > quarantine station
- > name of the importer
- > cause of non-compliance
- > disposal of imported food
- > remarks
- > publication date

A1.4.4 *Utility of the system*

The information is compiled manually and published in an Excel table on the MHLW website every month. Upon detection of non-compliance, the quarantine station which uncovers the infraction will take the necessary measures: ordering the importer to discard, ship back or use for any other purpose than human consumption. The quarantine station will also ask importers to investigate the cause of the non-compliance and take appropriate preventative measures to secure the safety of imported food.

A1.4.5 *Conclusions*

In the fiscal year 2020, of 2.35 million imported food items, 691 were found to be non-compliant. Of these, 158 failed on the grounds of microbiological criteria, 155 failed due to the presence of toxic or hazardous substances and pathogenic microorganisms, 111 were associated with food additives, 137 failed due to pesticide residues (e.g. exceeding MRL for pesticide residues), while 15 non-compliant foods were found to have veterinary drug residues (e.g. exceeding MRL for veterinary drugs).

TABLE A1.4 ADVANTAGES AND DISADVANTAGES OF JAPANESE SYSTEM

ADVANTAGES	DISADVANTAGES
Low complexity	No integration with import systems
Information published on MHLW website	

ANNEX 2

ADDITIONAL DETAIL ON RELEVANT IT STANDARDS AND GUIDANCE

To ensure the appropriate standards and guidelines are known and followed, it is advisable to complete the Business Requirement Specifications (BRS) for the countries' e-notification system first. A generic BRS template is available to facilitate this.

To allow the traceability of food products, parameters relevant to product description and origin should follow those for e-certification systems. These are described in the guidelines for official certificate formats (CAC/GL 38–2001). By way of example, such fields include the country of production, country of manufacturing, country of packaging, and country of destination, as well as the certificate number. For country codes, the ISO Standard 3166-1, which employs the two/three-letter codes should be followed.

The language used to exchange information between data systems and between countries should be based on eXtended Markup Language (XML). Here, UNECE provides the current standard – D21A. Further information regarding XML naming and design rules can be found in the XML Naming and Design Rules Technical Specification.

To ensure traceability in the supply chain, the recommended procedure is to follow the Supply Chain Reference Data Model Business Requirement Specification (SCRDM-BRS). This should be combined with the UN/CEFACT business process International Supply Chain Reference Model (ISCRM) and the BRS for the Multi-Modal Transport Reference Data Model (MMT RDM-BRS1). The UN/CEFACT SCRDM project has developed and published a business standard that can be applied by country, region or industry. The standard provides the definitions for contextualized supply chain data exchanges, which can then be integrated into software solutions for traders, agents, banks, customs, and other governmental authorities.

The SCRDM business standard is a reference data model based on the UN/CEFACT Core Component Library (CCL). It forms the basis for constructing Business Data Exchange Structure(s), following the UN/CEFACT Core Components Business Document Assembly Technical Specification, a methodology for developing business documents. The main audience for this document is UN/CEFACT Business and Information Technology (IT) experts: they are responsible for specifying, creating or updating existing UN/CEFACT reference data models. In addition, they cover the business requirements for e-business solutions in a specific domain and further the development of solutions as relevant standards. Additional audiences may include other standards bodies or users, as well as developers in developed or developing economies.

ANNEX 3

ADDITIONAL DETAIL ON SYSTEM INFRASTRUCTURE

The use of Information technology (IT) is essential to the operation of e-notification systems. They require a minimum level of hardware and software, as well as staff who know how to operate and maintain them.

A3.1 HARDWARE

Key hardware requirements are the central systems hosting the database (for example a LINUX server) and the devices to access and query said database. These can be personal computers and/or mobile devices including telephones, tablets etc. The cost of acquiring and setting up this hardware can be high. There are also ongoing costs associated with maintaining and implementing the necessary hardware upgrades. Depending on the system setup, it may be necessary to not only consider the hardware requirements of the government unit hosting the server and database, but also the hardware of the local competent authorities that access the database.

A3.2 SOFTWARE

Software needs include the database, search engine and user interface (UI) required to generate outputs – such as a display on a personal computer or a portable device – or produce outputs, e.g. PDFs that may be printed or stored on an electronic device.

In the case of databases, Microsoft Access or Oracle are frequently used. The database either needs to have an integrated or external search engine. A commonly used external platform, based on JAVA, is Elastic Search. This would obviously require a JAVA environment (e.g. JAVA 8, 64bit). If PDF generation is required, an appropriate tool such as iTEXT needs to be integrated into the system. Running databases of this kind on Linux as opposed to Windows servers typically requires fewer resources, including lower wattage.

An e-notification system requires a front-end user interface that displays information. Front-end-frameworks like AngularJS can be used for this purpose. A WebApplication Server is also required to send/retrieve information from a server (for example, Weblogic hosted on Linux Server to limit resources and/or power requirements). It is important that the design of the user interface is responsive, i.e. that the layout of information adjusts with the type of screen it is displayed on, whether a personal computer monitor, tablet or smartphone.

A3.3 SECURITY AND MAINTENANCE

The maintenance and security of the IT system is vital – not only to keep the system operational, but also to ensure that sensitive data, such as those relating to the importing company, may not be accessed by unauthorized users or hackers. Such maintenance should either be performed by qualified in-house staff or subcontracted to a reputable IT company. For this purpose, the minimum recommendation is to use Secure Socket Layer (SSL) encryption between access points, as well as Secure/Multipurpose Internet Mail Extensions and/or Pretty Good Privacy for email exchange where constant internet availability cannot be ensured. Key to all these systems is end-to-end encryption.

For maintenance, it is important to ensure that the data are mirrored off-premises in an encrypted format and that backups are generated on a regular basis. System upgrades and updated versions of operating systems and languages must also be installed promptly.

ANNEX 4

FOOD CONTROL NOTIFICATION SYSTEM ASSESSMENT CHECKLIST

This checklist aims to assess the status of a national food control notification system. Such a system provides notification to identified stakeholders of non-compliance of food products with regulatory requirements concerning food safety, labelling, food composition, etc.

A4.1 CURRENT STATUS OF FOOD CONTROL NOTIFICATION SYSTEM

1. Is a food control notification system currently in operation?
 - Yes *Go to Q3*
 - No *Go to Q2*

2. Is a food control notification system currently being implemented or are there plans to do so?
 - Currently being implemented *Go to 3*
 - Plans to implement *Go to 3*
 - No plans to implement *Go to end*

3. Does the notification system use electronic means of processing and communicating notifications to stakeholders?
 - Yes
 - No

4. How long has the notification system been operational for?
 - Less 1 year
 - 1 to 2 years
 - 3 to 5 years
 - 6 to 10 years
 - More than 10 years

5. Does the notification system cover all food commodities?

Yes

No

6. If no, what food commodities are not covered by the system (*specify below*)?

1	
2	
3	
4	
5	

7. What parameters of food control does the notification system cover?

Food safety

Labelling

Food composition

Other (*Specify*): _____

8. How are notifications issued (*specify all that apply*)?

Paper

Email

Text messages

Website

Application (app) on mobile devices

Other (*specify*): _____

9. Are there other aspects of the food control notification system that are worth highlighting?

A4.2 LEGAL FRAMEWORK

10. Is there specific provision for the food control notification system in current legislation?
- Yes *Go to Q12*
- No *Go to Q11*
11. Are there defined administrative procedures or requirements that outline the role and form of the food control notification system?
- Yes *Go to Q13*
- No *Go to Q12*
12. Is current legislation being reformed to make specific provisions for a notification system?
- Yes *Go to Q12*
- No *Go to Q25*
13. Are clear criteria defined as to the conditions that must be satisfied for a notification to be issued?
- Yes
- No
14. Does the current legal framework define which stakeholders have access to notifications?
- Yes *Go to Q16*
- No *Go to Q15*
15. Are there defined administrative procedures or requirements that outline which stakeholders have routine access to notifications?
- Yes *Go to Q16*
- No *Go to Q17*
16. Which stakeholders?
- Food businesses
- Consumers
- Food business organizations
- Consumer organizations
- Other (*specify*): _____

17. Can other stakeholders access the notifications through other means, for example freedom of information provisions?

- Yes
- No

18. Does the current legal framework define requirements concerning mandatory disclosure of information on failures in food control?

- Yes *Go to Q20*
- No *Go to Q19*

19. Are there defined administrative procedures or requirements concerning mandatory disclosure of information on failures in food control?

- Yes *Go to Q20*
- No *Go to Q21*

20. How frequently?

- Immediately
- Weekly
- Monthly
- Quarterly
- Annually

21. Is the current legal framework compliant with applicable international standards or guidelines?

- Yes *Go to Q22*
- No *Go to Q23*

22. Which standards or guidelines does it comply with (*tick all that apply below*)?

- Codex Guidelines for Generic Official Certificate Formats and the Production and Issuance of Certificates (CAC/GL-38-2005)
- ISO Codes for the Representation of Names of Countries and their Subdivisions – Part 1: Country codes (ISO 3166-1)
- UNECE XML Naming and Design Rules (UNECE D21A)
- World Customs Organization Harmonized Commodity Description and Coding System (HS System)

Other (*specify*): _____

23. Does the current legal framework define provisions related to data privacy concerning the food control notification system?

Yes *Go to Q24*

No *Go to Q25*

24. If yes, what are these provisions (*specify below*)?

25. Are there other aspects of the legal and/or administrative framework underlying the food control notification system that are worth highlighting?

A4.3 DECISION-MAKING AND COMMUNICATION

26. Has a standard operating procedure (SOP) been defined for decisions over when and how a notification is issued and by whom?

- Yes
- No

27. Has a standard operating procedure (SOP) been defined for decisions over the type of notification to be issued and to whom?

- Yes
- No

28. Is the food control notification system operated by a dedicated unit or group of staff?

- Yes
- No

29. Is more than one department, ministry or institution involved in the day-to-day operation of the notification system?

- Yes *Go to Q30*
- No *Go to Q33*

30. Which institutions are involved in the day-to-day operation of the notification system (*tick all that apply*)?

- Ministry of Agriculture
- Ministry of Health
- Bureau of Standards
- Customs authority
- Border inspection agency
- National food safety agency
- Regional governments
- Other (*Specify*): _____

31. Have clear responsibilities for each of these institutions been defined with respect to the notification process?

- Yes
- No

32. Have clear procedures for coordination and communication between these institutions been defined with respect to the notification process?

- Yes
- No

33. Has the notification system ever been tested to ensure effective decision-making and communication on a day-to-day basis?

- Yes *Go to Q34*
- No *Go to Q38*

34. Has a standard operating procedure (SOP) been defined for testing the notification system to ensure effective decision-making and communication on a day-to-day basis?

- Yes *Go to Q35*
- No *Go to Q36*

35. How frequently is the system tested?

- Once a year
- Once every one to two years
- Once every three to four years
- Once every five or more years

36. When was the system last tested?

- Within the last year
- Within the last 1 to 2 years
- Within the last 3 to 4 years
- Within the last 5 or more years

37. Is the system tested adequately in terms of how and/or when testing is undertaken?

- Yes
- No

38. Have specific responsibilities been defined with respect to the institutional personnel involved in the notification process?

- Yes
- No

39. Has a specific institution been defined with respect to the overall management and coordination of the notification process?

- Yes *Go to Q40*
- No *Go to Q42*

40. Which institution? (*specify*): _____

41. Within this institution, has a specific position been defined for the overall management and coordination of the notification process?

- Yes *Go to Q43*
- No *Go to Q42*

42. What is the title of this position? (*specify*): _____

43. Are procedures in place for the communication of questions or complaints from stakeholders with respect to the notifications that have been issued?

- Yes
- No

44. Have procedures for engaging with stakeholders on the notification process, including awareness-raising, been established?

- Yes
- No

45. Are there other decision-making and/or communications aspects of the food control notification system that are worth highlighting?

A4.4 DATA PROCESSING, VERIFICATION, AND CURATION

46. Has a specific unit been defined to undertake the processing, verification and curation of data?

Yes *Go to Q47*

No *Go to Q48*

47. What is the name of this unit? (*specify*): _____

48. Have staff been allocated for the processing, verification and curation of data?

Yes *Go to Q49*

No *Go to Q50*

49. If yes, how many staff have been allocated for this purpose (*give number below*)?

50. Has a standard operating procedure (SOP) been defined for verifying the processing of data prior to the issuance of a notification?

Yes

No

51. Has the system of data processing and verification ever been tested for accuracy and timeliness?

Yes *Go to Q51*

No *Go to Q55*

52. Has a standard operating procedure (SOP) been defined to test the system of data processing and verification for accuracy and timeliness?

Yes

No

53. How regularly is the system tested?

Once a year

Once every one to two years

Once every three to four years

Once every five or more years

54. When was the system last tested?

- Within the last year
- Within the last 1 to 2 years
- Within the last 3 to 4 years
- Within the last 5 or more years

55. Is the system tested adequately in terms of how and/or when testing is undertaken?

- Yes
- No

56. Are procedures in place for the communication of questions or complaints about the processing, verification and/or curation of data?

- Yes
- No

57. Are there other aspects of the data processing, verification and curation adopted within the food control notification system that are worth highlighting?

A4.5 SYSTEM OPERATION AND MAINTENANCE

58. Has all the required hardware for the operation of the food control notification system been fully implemented?

- Yes *Go to Q60*
- No *Go to Q59*

59. Which of the following hardware requirements have been identified and/or specified but not yet fully implemented (*tick all that apply*)?

- Computers to undertake data processing
- Computers to host the database
- Computers to access the database
- Backup servers in different locations and/or cloud servers
- Other (*specify*): _____

60. Which of the following hardware requirements have been fully implemented (*tick all that apply*)?

- Computers to undertake data processing
- Computers to host the database
- Computers to access the database
- Backup servers in different locations and/or cloud servers
- Other (*specify*): _____

61. Is the notification database updated on a regular basis?

- Yes *Go to Q60*
- No *Go to Q70*

62. Provide an overview of your backup policy in terms of the number of backups, how long backups are kept, where they are stored, etc. (*write below*):

63. Is the database backed up automatically or manually?

- Automatically
- Manually

64. How regularly is the notification database backed up?

- Continuously
- Hourly
- Daily
- Weekly
- Other (*specify*): _____

65. Where is the notification database backed up to? (*tick all that apply*)?

- Local server
- Cloud server
- Other (*specify*): _____

66. Are systems in place to notify staff of backup failures?

- Yes *Go to Q65*
- No *Go to Q64*

67. If yes, how are staff informed about backup failures (*tick all that apply*)?

- Email
- Text messages
- Other (*specify*): _____

68. Has the backup system, including backup recovery, ever been tested in situations where there have been hardware and/or other failures?

- Yes *Go to Q69*
- No *Go to Q70*

69. When was the system last tested?

- Within the last year
- Within the last 1 to 2 years
- Within the last 3 to 4 years
- Within the last 5 or more years

70. Has all the required software for the operation of the food control notification system been fully implemented?

- Yes *Go to Q72*
- No *Go to Q71*

71. Which of the following software requirements have been identified and/or specified but not yet fully implemented (*tick all that apply*)?

- Windows software
- Server software
- Database software
- Search engine software
- Java script
- User interface software
- Application (app) software
- Webserver software
- Security software
- End-to-end encryption software
- PDF software
- Email distribution
- Text message distribution
- Application (app) operation
- Other (*specify*): _____

A4.6 RESOURCE REQUIREMENTS

72. Has the overall financial, human resource and other costs of establishing or upgrading the notification system been estimated?

- Yes *Go to Q83*
- No *Go to Q84*

73. What is the estimated cost of each of the following (*specify below*)?

Hardware	
Software	
Consultancy services	
Staff training	
Staff time	
Stakeholder engagement and awareness-raising	
Other (<i>specify</i>)	

74. Have the overall financial, human resource and other costs of operating and maintaining the notification system been estimated?

- Yes *Go to Q85*
- No *Go to Q86*

75. What is the estimated cost of each of the following (*specify below*)?

Hardware maintenance	
Software maintenance and upgrading	
Office space	
Utilities	
Consultancy services	
Staff time	
Stakeholder engagement and awareness-raising	
Other (<i>specify</i>)	

76. Has a specific annual budget line been defined for the operation of the system?

- Yes *Go to Q87*
- No *Go to Q88*

77. What is the total annual budget including hardware, software, office space, human resources, etc. (*give budget below*)?

78. Is the current allocated budget sufficient to meet the full needs of operating and maintaining the notification system?

- Yes
- No

79. Overall, how well does the current system work with respect to each of the following
(tick one per line)?

	EXCELLENT	SATISFACTORY	UNSATISFACTORY
Timely and effective decision-making with respect to the need to issue a notification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Timely issuance of notifications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Timely communication of notifications to stakeholders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Time from notification to complete product withdrawal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Completeness of product withdrawal after a notification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Degree to which feedback is provided once a product has been withdrawn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Level of data protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coordination between institutions involved in the notification process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maintenance of the notification system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Upgrading of the system in terms of security	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Upgrading of the system in terms of communication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

80. Are there other aspects of the resource requirements of the food control notification system that are worth highlighting?



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TECHNICAL GUIDANCE FOR THE IMPLEMENTATION OF E-NOTIFICATION SYSTEMS FOR FOOD CONTROL

Over a third of global agrifood exports cross borders at least twice before reaching the final consumer. The complexity of food supply chains and the growing importance of the global agrifood trade therefore creates new and ever greater challenges for the management of food safety. As tracing the origins of unsafe food is more complex and time-consuming, so geographically dispersed foods that have been produced, processed and distributed by multiple actors can pose heightened food safety risks. Many countries have thus implemented more rigorous food control systems for agrifood imports, while others need assistance to develop them. Food exporters also continue to face difficulties accessing major markets: some, for example, may struggle to understand import controls, which may lead to food commodities being rejected, detained, or in some instances destroyed.

FAO developed this guidance as part of a project entitled “Digital solutions in support of improved official food control services”. The aim is to provide guidance for the design and implementation of a food control e-notification system that is tailored to national needs and resources. This guidance includes the system’s legal basis, structure, and operational parameters, as well as its infrastructure and human resource requirements. It sets out the prerequisites for an e-notification system and highlights the legal framework that needs to be in place to enable it. Elsewhere, it outlines the resources such a system requires – human, hardware, and software – and lays down its typical structure: this includes the responsibilities that need to be assigned, the types of notifications, and the required institutional arrangements. Finally, the guidance emphasizes the need for data traceability and the importance of its format, which should allow the international exchange of information if necessary.

A checklist of aspects to be considered when implementing an e-notification system is provided for the user, as well as four examples of existing systems operating at different levels of complexity – from Canada, Chile, the European Commission and Japan.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS (FAO)

AGRICULTURE AND CONSUMER PROTECTION DEPARTMENT

OFFICE FOR FOOD SAFETY

FOOD SAFETY AND QUALITY UNIT

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