Netherlands Food and Consumer
Product Safety Authority
Ministry of Agriculture,
Nature and Food Quality

The first Food Safety Statement

Contents

Food Safety Knowledge and Information Sheets – December 2017 *(in Dutch)*

Foreword

On average, a Dutch person will consume more than three kilograms in food and drink a day, with nearly two kilograms in the form of tea, coffee, water, soft drinks, juices and alcoholic drinks, and one kilogram in the form of non-liquid food.[1] It is vital to human health that this food be safe.

The Netherlands Food and Consumer Product Safety Authority (NVWA) supervises businesses operating within the food supply chain and monitors their compliance with the legal requirements for safe food. This supervision covers the entire food supply chain, focusing on both plant-based and animal-based food production. It therefore extends far beyond merely monitoring food sold to the consumer and served in hotel and catering establishments.

The fact that there are 250,000 businesses operating within the food supply chain in the Netherlands alone is one of the reasons for such a wider scope of supervision. Furthermore, food production and consumption is a global matter. Across the globe, raw materials are sourced, animals are bred, plants are cultivated and intermediate and end products are produced, which are then transported and sold. In the global context, the Netherlands is a country where large quantities of food and raw materials for food are imported, produced and exported. The very scale of this economic activity makes supervision of all the businesses and products within the food supply chain in the Netherlands a major challenge.

Consumers must be able to rely on the safety of their food. At the same time, it is only right to put food safety into a broader context; illness and death will far more often stem from an unhealthy lifestyle, such as an unhealthy diet, than from consumption of unsafe food.

In the context of 'the NVWA Consumer Monitor'[2], conducted biannually at the behest of the NVWA to measure the confidence of consumers in the safety of foodstuffs. The results of the last Monitor (April 2018) show an increase in consumer confidence as compared to the years 2013-2015. Consumer confidence is not yet back at the level of 2011, but there are clear signs of recovery.

The *Food Safety Statement* provides an insight into food safety in the Netherlands from the competent authority's perspective.

The periodic publication of the "... Statement" on each of the public interests represented by the NVWA is part of the NVWA 2020 improvement programme. Knowledge-driven and risk-based supervision takes centre stage and which also means more attention is paid to reflecting on supervisory outcomes. The purpose of the Statement is not only to pass the findings on to citizens, consumers, businesses, civic organisations, policy-makers and politicians, but also to enable us to focus more closely on potential risks arising from social trends and developments. The public's involvement in establishing a circular economy is one example of an important social trend that should be taken into account when deciding where to focus supervision. Recycling products and minimising value destruction help to make society more sustainable, but at the same time can introduce potential food safety risks. Waste can find its way into the food chain; one well-known example is the migration of mineral oils from packaging made from recycled paper and cardboard.

I will take into account the findings from this initial Food Safety Statement when implementing the NVWA 2020 improvement programme. Risk-based supervision and ensuring food safety throughout the entire production chain, actively investigating and tackling (existing and new) risks in the supply chain, taking decisive action to deal with food fraud and having an open dialogue with all the stakeholders involved are my priorities.

R.J.T. van Lint
Inspector General of the Netherlands Food and Consumer Product Safety Authority

[1] This is shown in the food consumption poll (VCP) that the National Institute for Public Health and Environmental Protection (RIVM) conducted at the behest of the Ministry of Health, Welfare and Sport (VWS) in the period 2012 – 2014.

[2] https://www.nvwa.nl/documenten/consument/eten-drinken-roken/overige-voedselveiligheid/risicobeoordelingen/consumentenmonitor-voedselveiligheid-mei-2018

Summary: The Food Safety Statement at a glance

Consumers must be able to rely on the safety of their food. Anyone producing or selling food is therefore responsible for ensuring that they only market safe food. The Netherlands Food and Consumer Product Safety Authority (NVWA) supervises the food safety in food business operators to ensure that the food they produce and market is safe. First-line supervision of food safety in the dairy sector has been assigned to the Netherlands Controlling Authority for Milk and Milk Products (COKZ) and in the egg sector to and the Netherlands Controlling Authority for Eggs (NCAE).

The Food Safety Statement provides policy-makers, politicians, producers, consumers and representatives of interest groups with a snapshot of the present situation regarding food safety in the Netherlands based, on the information and knowledge at the NVWA's disposal

How is food safety regulated?

The statutory food safety system in the Netherlands is heavily based on European and national regulations. The basic principle behind the system is that responsibility for safe food rests with the business community. This is laid down by law in what is known as the General Food Law Regulation (GFLR), which forms the basis for the system of food safety requirements within the European Union (EU). The GFLR stipulates that businesses must comply with food safety requirements. Food businesses are obliged to notify the NVWA if they have placed unsafe food on the market and must withdraw that food. Businesses must also inform any consumers who have already purchased the product.

The NVWA is the competent authority and is thus responsible for supervision and enforcement of regulations. The NVWA's guiding principle when performing its supervisory task can be summarised as being "lenient whenever possible and tough when required". The NVWA operates on the basis that it can safely rely on businesses that live up to their responsibilities, i.e. businesses that have demonstrated in the past that they comply with the rules. This allows the NVWA to carry out risk-based supervision. When businesses fail to live up to their responsibilities, or betray the confidence placed in them, the NVWA will take action.

As part of our monitoring of compliance with the regulations, which involves inspecting businesses and/or testing products, we take measures to encourage and, if necessary, compel businesses to withdraw food from circulation and to cease marketing and importing of products that do not meet legal requirements.

What are the results of supervision?

Where possible under food safety laws and regulations, any investigation carried out by the NVWA will be risk-based by nature. That means that, before investigating businesses or products, the NVWA will first perform food safety risk analysis.

In 2015 and 2016, the years to which this Statement pertains, the NVWA carried out food safety tests on foodstuffs in the laboratory to establish whether the requirements in respect of food safety had been met. Animal feed and animal by-products were also tested, because harmful components in those products could find their way into the food supply chain.

The laboratory examination of foodstuffs included tests for pathogenic bacteria and viruses, mycotoxins (produced by mould on plant-based materials) and plant protection product residues. The results of these sample tests also give an indication of food safety in the Netherlands.

Microbiological sampling in 2016 showed that roughly 0.6% of the batches tested did not meet a food safety criterion for pathogens. Those samples were deemed harmful and had to be withdrawn from the market by the producer. In such cases, the NVWA goes on to identify the cause and ensures that the producer takes steps to prevent any repetition.

It turned out in 2015 and 2016 that the legal limit for mycotoxins was exceeded in an average of 3,9% of the samples from risk-based testing of various categories of foodstuffs. Slightly higher than average non-compliance rates were found mainly in samples of foodstuffs (nuts, seeds, spices and dried fruit) from outside the EU. The batches concerned were refused entry into the EU or withdrawn from circulation.

Vegetables and fruits were tested for plant protection product residues. Exceeding the maximum residue limit was the case in 2.5% of the randomly selected samples tested in 2015 and 2016. With regard to the risk-based sampling process, 11.4% of the samples tested were non-compliant. Exceeding the MRL means that the food does not comply with the legal requirements and can therefore no longer be traded. However, it does not necessarily mean that there is a health risk.

In addition to the abovementioned results, the Food Safety Statement and the basic information sheets included in an appendix describe the results of:

- testing of food samples for other contaminants, such as heavy metals, PAHs and acrylamide;
- compliance with legislation on additives and labelling requirements;
- testing of other products, such as animal feed and animal by-products.

The NVWA has also looked at the production process at business to consumer market. In 2015, checks were carried out at 21,000 [3] out of a total of 240,000 businesses. In 2016, 24,000 of the 250,000 businesses in the Netherlands were checked. The businesses that were checked by the NVWA had been selected in advance on the basis of a risk analysis.

In 2015, it turned out that 8,000 of the 21,000 businesses checked were not producing and/or selling food fully in accordance with the regulations. In 2016, this was true of 10,000 of the 24,000 businesses checked.

Detecting and tackling food fraud

Food safety requires continuous attention and care on the part of businesses and the competent authority. In addition to addressing risks resulting from insufficient attention or care being paid to safe production, marketing and preparation, the prevention and combating of fraud involving food also requires attention. Fraudsters make active attempts to remain out of the competent authority's line of sight, so it is impossible to make any pronouncements on the scale of food fraud. The NVWA's Fraud Action Plan improvement programme is providing a clearer insight into food fraud and confirming the impression that there is more going wrong than would appear at first glance. Food fraud does not necessarily result in an unsafe product. However, fraud always results in a product where the facts do not add up; the contents and label will not match. This creates an unknown product or a product of unknown origin whose potential as a food safety hazard is unclear. However, food fraud can also pose a direct food safety risk, for example where a fraudster conceals the fact that a product contains high-risk or harmful substances.

The increase in the number of indications related to food fraud does not necessarily mean that food fraud is more prevalent now than was previously the case. The increased attention paid to food fraud and the greater opportunities for detecting such fraud have also helped to bring about an increase in the number of food fraud cases being reported.

That said, the NVWA notes that the opportunities to commit food fraud and its profitability have increased. This represents a risk in terms of traceability as well as food safety. Furthermore, fraud undermines consumer confidence in food and in the legislative and supervisory system. The business community has the means to bring food fraud to a halt. Businesses, alone or with other links in the production chain, can take measures to prevent food fraud and to ensure that they conduct their operations in a discerning manner and with integrity. When a business identifies or suspects fraudulent behaviour within the chain, it is important that it notifies the NVWA. Notification levels are currently still inadequate.

Future developments

The NVWA is performing its supervisory and investigative role in an ever-changing environment, which means that the nature, scale and location of food safety risks are liable to change. The NVWA takes developments into consideration and is actively accumulating knowledge to be able to continue to focus its attention on situations where food safety risks occur. Using the knowledge of the RIVM, RIKILT, other knowledge institutions and European institutions, the NVWA makes a distinction between developments with the potential to pose a food safety risk, including the circular economy, climate change and the growth of the world's population, and developments that can be directly linked to food safety, such as production methods, new foodstuffs and new commercial practices and trends.

For instance, recycling products and minimising value destruction helps to make society more sustainable, but at the same time has the potential to increase the risk of waste entering the food supply chain. The risk of mineral oils from packaging made from recycled paper and cardboard migrating to food is now a well-known example of recycling's potential to generate new risks. New strategies to prevent and combat animal diseases or the use of specific plant protection products could likewise cause new food safety risks. New production processes may result in new risks.

[3] All the figures in this summary are given as round figures.

The Food Safety Statement from the consumer's perspective

Is food in the Netherlands safe now? Based on the inspections, analyses of samples, risk analyses and the non-compliance cases detected, we can conclude that the food offered to consumers is generally safe. This does not mean that an unsafe product will never appear or occur on the market. Despite all the measures taken by businesses and the NVWA's supervision, foodstuffs that do not meet the requirements will sometimes make it onto the market. Food that is known not to meet legal requirements is withdrawn from the market. On instruction of the NVWA, the business from which the unsafe product originates will have to take measures to prevent any repetition.

Moreover, consumers themselves are also partly responsible for the safety of the food they eat, although this does not in any way absolve the producer and companies operating in, among others, the hotel and catering industry from the responsibility of marketing only food that is safe.

There are various aspects to the responsibility borne by consumers. First, it is important that they store and prepare food properly after having bought it. Consumers can reduce the risk of a food-borne infection caused by pathogens by heating products such as raw milk, fish and meat or meat products properly before eating them. The Netherlands Nutrition Centre provides practical tips on what consumers can do to avoid food safety risks associated with the storage and preparation of food. Risks to people's health are also smaller if they eat a varied diet, i.e. do not mainly stick to one or several specific foodstuffs. Finally, consumers can minimise risks by considering the source of the products they buy. For example, they will run a greater risk if they buy products through irregular sales channels. That is because businesses selling products outside the regular channels are not always known to the NVWA and are therefore not under its supervision.

The Food Safety Statement from the perspective of the business community

When food safety incidents occur, it is often difficult to identify the origin of the food (and the raw materials). This hampers the NVWA's investigations and ability to take effective measures. To comply with its statutory obligation, the business community should do more to make it possible to trace food (improve "traceability").

Businesses have a legal obligation to always notify the NVWA if they have marketed food that does not meet the requirements. In cases involving a harmful product, the NVWA expects a rapid recall operation and "prompt" notification accompanied by information to enable the company that produced or sold the foodstuff to be traced, as well as details of the action taken by the business concerned.

It would also be desirable for the business community to make progress with regard to ensuring food safety in the supply chain, for example by using reliable and effective private quality assurance schemes. The greater the advances made by the business community in this area, the greater the guarantee that food safety will be better safeguarded for consumers. It also gives the NVWA the opportunity focus on those businesses posing the greatest food safety risks. The NVWA will have more flexibility to carry out risk-based supervision and, for example, to investigate risks in irregular trade.

The Food Safety Statement from the perspective of policy-makers and politicians

Responsibility for the further development of the food safety system lies chiefly with the Ministry of Health, Welfare and Sport and the Ministry of Agriculture, Nature and Food Quality. The NVWA has highlighted, in particular, the need for a number of specific improvements to the system that could help to ensure more effective management of the abovementioned food safety risks. Those improvements include better points of reference so that, where necessary, traceability can be enforced and penalisation can be brought to the same level for similar contraventions.

In conclusion

All things considered, food in the Netherlands can generally be described as safe. This is in part thanks to the legislative system, compliance by the majority of businesses and the NVWA's supervision of all links in the food supply chain. The interplay between legislator, businesses and supervisory authority is, and will remain, necessary if food safety risks and food fraud are to be tackled and the food safety level is to be maintained in the Netherlands.

1 Introduction

1.1 Introduction

The structure and content of the Food Safety Statement is explained first, chapter by chapter, in this introduction. Each chapter begins with a description of its own structure.

This is followed by a definition of the term food safety and an explanation of the link between food safety and public health.

Lastly, there is an explanation of the purpose and scope of the Food Safety Statement, how frequently it will be published and its further development.

1.2 The structure of the Food Safety Statement

This document provides an overview of the information available on hazards and risks, compliance within the food supply chain, the cases of fraud and the picture of the future in the area of food safety. It contains basic information about the NVWA's view of the current state of food safety in the Netherlands based on the years 2015 and 2016, based on the data of the NVWA, the Netherlands Controlling Authority for Milk and Milk Products (COKZ[4]) and the Netherlands Controlling Authority for Eggs ((NCAE[5]).

Chapter 1 describes a number of introductory topics, including the purpose and scope of the document. Chapter 2 provides an assessment of the food safety system. An overview of the NVWA's key findings in the area of food safety is included in

[4] COKZ: http://cokz.nl/

[5] NCAE: http://ncae.nl/

Chapter 3. Chapter 4 contains the findings resulting from investigations into food fraud. Future developments affecting the safety of our food are discussed in Chapter 5. Finally, food safety is put into perspective in Chapter 6.

The contents of the Food Safety Statement are based on the "food safety information sheets" (NVWA, December 2017), in which more comprehensive and in-depth information about food safety may be found.

Appendix 2 contains an overview of the frequency of supervision and compliance rates at the level of production chains and business groups.

1.3 What is food safety?

"Food is safe when it poses no unacceptable microbiological, chemical or physical risks to humans." This description forms the basis of the laws and regulations on food safety and is the point of departure for the way in which the NVWA organises and carries out its supervisory task.

Food safety means different things to different people in Dutch society. This can give rise to debate and incomprehension as regards the competent authority's work. Topics such as high levels of fat, salt or sugar are not covered by the statutory definition of food safety that determines the scope of the NVWA's supervisory task, but rather come under the theme "healthy nutrition". The Hazard Analysis and Critical Control Points (HACCP) system[6] is a means of ensuring food safety. It makes the following distinction between food safety hazards:

- chemical hazards associated with the presence of, among other things, environmental and process-related contaminants, mould toxins, pesticides residues, dioxins, antibiotics, hormones[7] and allergens;
- microbiological hazards resulting from the presence of harmful bacteria, moulds, viruses or parasites;
- physical hazards connected to the presence of harmful forms of, among other things, glass, plastic, wood and metal.

Chemical hazards

Undesirable chemical substances can occur unintentionally in the raw materials used to produce a particular food or in the foodstuffs themselves. Such substances are referred to as contaminants. Examples include naturally occurring mycotoxins created by moulds (agricultural contaminants) or substances occurring in the environment (environmental contaminants). Chemical contaminants can also be created during the preparation of food, one example being the acrylamide formed in overcooked chips. Such substances are referred to as process contaminants.

Chemical substances are also deliberately used during the production of foodstuffs or during crop cultivation. Examples include additives and pesticides. There is no danger to public health when such substances are used correctly and in accordance with the regulations. Any surplus plant protection products remaining on foodstuffs are referred to as "residues".

The NVWA also monitors compliance with food labelling requirements. Businesses' failure to comply with these requirements can cause food safety risks in a limited number of cases. Among other things, a label must state any allergenic components and best-before dates. Omitting such information could entail a risk for consumers who are allergic to the components concerned.

[6] The term "hazards" is used officially in the HACCP system, but in practice, the presence of something alive (or which was once alive) that is visible to the naked eye is treated as a physical hazard. Account should also be taken of any microbiological hazards. For instance, the presence of a mouse, alive or dead, in a sack of muesli is a physical hazard, which might also be accompanied by the pathogen *Salmonella* as a microbiological hazard.

[7] Dioxins, antibiotics and hormones are chiefly monitored in animal products during phases of the food production chain that fall outside the scope of the first Food Safety Statement.

De NVWA houdt ook toezicht op het naleven van de etiketteringsvoorschriften van levensmiddelen. Als bedrijven deze niet naleven, veroorzaakt dat in een beperkt aantal gevallen een risico voor de voedselveiligheid. Op een etiket moeten onder andere allergene bestanddelen en houdbaarheidsdata worden vermeld. Deze informatie achterwege laten kan een risico inhouden voor consumenten die allergisch zijn voor de betreffende bestanddelen.

Microbiological hazards
Various sources, such as humans, animals, raw materials or the environment can cause microbiological hazards in foodstuffs. In some cases, those hazards go on to develop in or on the food from initially harmless quantities to harmful quantities. A batch of foodstuffs that is contaminated with a microbiological hazard can in many cases be dealt with by eliminating the microbiological hazard, for example by heating the foodstuffs concerned. It will then be safe for consumption.

Physical hazards
Physical hazards, such as pieces of wood or glass, can usually be seen in the food, including by the consumer. Testing will generally enable the cause of the hazard to be properly identified. A batch with physical hazards in it will usually be withdrawn from the market and destroyed.

1.4 Food safety is important to human health

Food and safety are basic human needs.

Human health may be at risk if food safety is not in order. The converse is not true, because even if food safety is in order, food consumption can still give rise to health problems. For example, someone might eat too much or too little of a particular food or ingredient. Illness from unsafe food can strike at different points in time. This will often be shortly after the food has been eaten if a virus or bacterium is the cause, but may take far longer if the symptoms are the result of a high-risk chemical substance. Physical contaminants in the food, such as glass or plastic, can cause discomfort or injury to the person eating them practically immediately.

Around 700,000 people in the Netherlands fall ill every year shortly after eating food as a result of the bacteria, parasites or viruses it contains.[8] Some fall ill because they have purchased and consumed unsafe food and others because they did not store or prepare the food, which was fine at the time of purchase, properly after having bought it. It is not known how many people fall ill as a result of chemical substances in food. The presence of such substances in food generally does not immediately result in illness, and if people do become ill as a result, their illness cannot usually be related directly to previous consumption of food containing those substances. Nor is it possible to state how many people's health is damaged as a result of physical contaminants in food. The NVWA is notified when this occurs, though. Such food must be recalled and may not be eaten.

[8] RIVM calculations for 2015 and 2016.

Figure 1

Relationship between **food safety and human health**

Food safety has an impact on human **health**

Whose responsibility is it?

The Producer
is responsible for the **safety** of the food on offer.

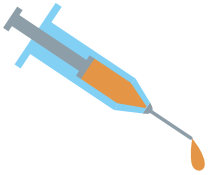
The Consumer
makes **choices** and is responsible for everything that happens to food in the **home.**

NVWA

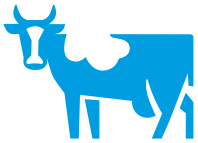
NVWA
supervises the safety of foodstuffs.

The NVWA's supervision of **food safety** also includes **monitoring:**

plant health/ plant protection
For example, potato cyst nematodes in potatoes > greater use of plant protection products > residues can find their way into foodstuffs.



animal health
For example, zoonoses and use of antibiotics, other medicinal products and hormones > residues can find their way into foodstuffs.



animal welfare
For example, the welfare of cattle grazing outdoors is higher > this is beneficial to animals' and people's health.

1.5 The purpose of the Food Safety Statement

The purpose of the Food Safety Statement is to provide politicians, organisations active in the food market and consumers with an idea of the present situation regarding food safety in the Netherlands. Based on its knowledge and the information it obtains through supervisory activities, the NVWA has an active role in the public debate on food safety. A transparent Authority provides the information at its disposal for the benefit of groups in society who wish to make use of it. This first Food Safety Statement is therefore also being sent to the Minister for Medical Care, the Minister of Agriculture, Nature and Food Quality and the House of Representatives of the States General.

1.6 The scope of the Food Safety Statement

This Food Safety Statement has been written from the perspective of the NVWA as the competent authority and is largely based on the findings from its supervision and enforcement of food safety. These focus on food production processes and the testing of food products.

This Food Safety Statement describes food safety in the links where foodstuffs are handled and processed, imported, marketed and offered to the consumer. The findings resulting from the monitoring of businesses carrying out activities involving animal feed and animal by-products are also included. This information is important because the use thereof often is the resource of food safety risks. Pathogens or hazardous substances can find their way into products of animal origin through animal feed or through fraud involving animal by-products.

The links involving livestock farming, the transport of live animals, slaughterhouses and the cultivation of plants for consumption are not discussed in this Statement.

The data and information from inspections, random sampling, sample testing and fraud detection in 2015 and 2016 have been used for all domains[9] within the scope of this Food Safety Statement.

[9] An NVWA classification used to group the field of activity by domains based on a connection in laws and regulations and a connection in terms of human or environmental effects where laws and regulations are contravened.

2 The food safety system

2.1 Introduction

The first part of this chapter contains a description of the policy and the food safety legislative system. The food safety system is based on national and international government policies and comprises food safety laws and regulations, guarantees provided by the business community and the supervision thereof. The description also covers the position, role and tasks of the business community and the NVWA in this system, and the consumer's responsibility as regards food safety.

2.2 The food safety policy

The food safety policy is formulated at national and international level. The EU's policy and legislation is chiefly relevant at international level; this is the point of departure for the formulation of the policy, laws and regulations at national level and the interpretation thereof.

The policy objectives of the EU[10] and of the Dutch government are aimed at a high-quality, sustainable, healthy and safe supply of food in Europe and the Netherlands respectively. The policy also contains measures to promote citizens' health.

The EU's food safety policy entails the following:

- comprehensive legislation on food and animal feed safety and on food hygiene;
- decision-making based on sound scientific advice;
- enforcement and controls.

[10] https://ec.europa.eu/food/safety/general_food_law_en

The EU's food safety laws and regulations are based on scientific findings. The European Food Safety Authority (EFSA) provides the European Commission and EU Member States with independent scientific advice. The European Commission can make proposals for legislation and issue authorisations for permitted substances on the basis of that advice. The EFSA highlights hazards, enabling Member States to identify what action to take at European and national level when faced with a food safety crisis.

2.3 Food safety laws and regulations

The food safety system is heavily based on European and national regulations. The Netherlands is a member of the European Union, so Dutch businesses have to deal with European and Dutch legislation.

Regulation (EC) No 882/2004 of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules was laid down to harmonise as far as possible controls in respect of food safety, as well as animal health, animal welfare, animal feed, phytosanitary measures and biological production in Europe. In accordance with that regulation, the Netherlands is obliged to follow and report on the Multi-Annual National Control Plan (MANCP).[11] This Regulation has been updated and its successor will enter into force[12] on 14 December 2019.

There is specific legislation in force in Europe for various groups of substances, such as contaminants, plant protection product residues, additives, veterinary medicinal products and a number of plant toxins to ensure chemical food safety. Additives, plant protection products and veterinary medicinal products may be used only in accordance with the regulations so that their use does not present a public health risk.

Much of the European legislation on microbial food safety is aimed at preventing food-borne infections caused by Salmonella. There is also specific legislation for other pathogens, such as Listeria monocytogenes and Trichinella. The Dutch Commodities Act (Warenwet) supplements this European legislation with product standards for several pathogens in order to afford human health even better protection.

Finally, laws and regulations are in place with regard to labelling. Their primary purpose is to provide consumers with correct and clear information and to prevent them from being misled. Contravention of those laws and regulations by wrongly failing to mention an allergen or best-before date or stating incorrect information in that regard on a label could pose a risk to food safety.

2.4 Statutory requirements to guarantee food safety

Under Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs, any company producing, processing or distributing foodstuffs or animal feed is obliged to establish food safety procedures based on the seven basic principles of the HACCP system. Those basic principles are described in the Codex Alimentarius of the World Health Organisation (WHO) and the Food and Agriculture Organization (FAO)[13] of the United Nations. The statutory hygiene requirements and the requirements for establishments included in it form the basis for safe production.

The HACCP basic principles require businesses to analyse the hazards of the raw materials, the preparation process and the end products and to take adequate measures to prevent or eliminate those hazards or to reduce them to an acceptable level. The purpose of the HACCP system is to enable a safe production process to be designed and set up as a preventive

[11] https://www.nvwa.nl/over-de-nvwa/organisatie/jaarverslagen-en-jaarplannen-nvwa/multi-annual-national-control-plan-mancp

[12] Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products.

[13] http://www.fao.org/fao-who-codexalimentarius/about-codex/en

measure. Prevention is more effective than inspection of the final product, because any hazards present are not always detected during final product checks.[14]

Businesses must always keep records of where the raw materials were obtained from and to whom products were supplied, thus ensuring traceability. If the HACCP plan has failed, businesses must withdraw unsafe food from the market as quickly as possible and, where necessary, warn consumers.

When designing and setting up a food safety plan, businesses may opt to use a hygiene code drawn up by their own sector organisations, tested by the NVWA and approved by the Minister of Health, Welfare and Sport (VWS) or the Minister of Agriculture, Nature and Food Quality (LNV).

Statutory limits for the presence of certain chemical and microbiological hazards have been laid down. Statutory maximum limits (MLs) for chemical substances are established at European level and apply in all Member States of the EU. The decision on establishing maximum limits for certain contaminants is usually taken on the basis of a risk assessment by the EFSA. Where it emerges that consumers are ingesting more of a particular contaminant than the safe health-based value, which is based on what is known as the tolerable daily intake (TDI), that can be a reason to establish statutory maximum limits. However, the ALARA principle is generally the basis for establishing the statutory limits for contaminants: As Low as Reasonably Achievable. This is because the presence of such substances in foodstuffs is usually unavoidable. The statutory maximum limits compel food businesses to ensure that the presence of chemical contaminants in their products is as low as possible. Exceeding a statutory limit does not always mean that there will be an acute health risk. However, the foodstuff concerned will not meet the food safety requirements, and since the substances involved are unsafe, the sale of and trade in the foodstuff must be stopped immediately.

The foregoing also applies in part to plant protection product residues in vegetables and fruit. The maximum residue limits (MRLs) are established on the basis of "good agricultural practices" and assessed to establish whether they meet food safety requirements. The authorisation process also includes an assessment to establish whether lifelong ingestion of the plant protection product residue represents a risk to health. The health-based limit value for that long-term ingestion is the acceptable daily intake (ADI). Public health considerations always take precedence in this regard. This is why the statutory MRLs are often at a sometimes significantly lower level than the level at which health risks occur.

Exceeding the MRL means that the foodstuff does not meet the statutory requirements and therefore may no longer be marketed. However, it does not necessarily mean that there is a risk to health. There will be a potential health risk only if the ingestion level of the substance concerned is greater than the safe health-based limit value. To determine whether this is the case, the safe ingestion level for a one-off large portion (worst case) of the vegetable or the fruit is usually taken as the basis. This is known as the Acute Reference Dose (ARfD). Only when that level is exceeded can the foodstuff be deemed harmful and can the possibility of a health risk not be ruled out.

In the case of microbiology, there are broadly two types of criteria that are taken into account: food safety criteria (FSC) and process hygiene criteria (PHC). A foodstuff that does not meet a food safety criterion is regarded as harmful. The food business then takes measures to protect consumers, for example through a recall operation or by eliminating the hazard, including by heating the product.

A foodstuff that does not meet a process hygiene criterion is not harmful, but the hygiene levels during the processing of the foodstuff are inadequate. Hygiene levels will have to be improved, but because the foodstuff is not unsafe, it does not need to be withdrawn from the market.

Where there is no statutory limit for a particular chemical or microbiological hazard, the NVWA applies the precautionary and proportionality principles[15] based on European principles.

[14] Relevance of microbial finished product testing in food safety management; Food Control 60 (2016) 31-43.

[15] https://ec.europa.eu/food/safety/general_food_law/principles_en

The precautionary principle is prescribed by law. This principle entails that, in specific situations, provisional risk management measures may be laid down in order to guarantee the high level of health protection decided on within the European Union. The precautionary principle may be applied in cases where, after an assessment of the information at hand, potentially negative effects on health are identified, but scientific uncertainty as to the level of the negative effects remains. If the proportionality principle is applied at the same time, the NVWA has to consider whether the potential health gains for consumers are reasonably proportionate to the loss suffered by the food business.

2.5 The responsibility of the food business operators

The responsibility for safe food rests with the food business operators (FBO's). This is laid down by law in what is known as the General Food Law Regulation (GFLR)[16], which forms the basis for the system of food safety requirements within the European Union (EU). Businesses must comply with the statutory provisions, the purpose of which is to guarantee food safety. Businesses are also responsible for ensuring that they are aware of the statutory provisions and requirements and know how to meet them. Consumers must be able to have confidence that the business community is marketing safe products and withdrawing unsafe foodstuffs.

Businesses are obliged to notify the NVWA whenever food[17] is unsafe and also whenever producers, buyers or suppliers fail to take responsibility for food safety.

To prevent and eliminate health risks as far as possible, it is crucial that all businesses in the food production chain shoulder their responsibilities and contribute to food safety. One business or one link that behaves irresponsibly will harm not only consumers, but also other businesses and, potentially, exports.

2.6 Safeguarding food safety by FBO's

Where they exist, businesses may voluntarily participate in private quality assurance schemes. The business community develops such schemes in order to improve safety in the food production chain. They enable suppliers to show their buyers, by means of a certificate issued by an independent third party, that they are complying with food safety requirements. They are also a means by which businesses that sell the products to consumers can show that they are selling safe and high-quality food.

Criteria for private assurance quality schemes have now been developed at national and international level. These criteria make it easier to compare the different schemes and show which schemes can provide the proper guarantees.

The NVWA carries out assessments to establish whether private quality assurance schemes meet the criteria. The so-called "scheme owners" can request an assessment. Such assessments are available to B2C (business-to-consumer) companies, including hotel and catering businesses, retailers, artisanal businesses and healthcare institutions and to B2B (business-to-business) companies, including primary sector enterprises and animal feed- and food (production) businesses.

The NVWA may decide to opt for adapted supervision for industrial food production businesses holding certificates *issued by an accepted private quality assurance scheme mentioned on Ketenborging.nl* [18] The level of modified supervision can increase when confidence turns out to be well-founded. Thanks to the safeguarding system provided by the business community, the NVWA can focus its efforts chiefly on monitoring private quality schemes and inspecting businesses that have not signed up to them.

[16] Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

[17] Under EU legislation, "unsafe food" means food that is unfit for consumption (1) and/or harmful to human health (2).

[18] See the website of the Ketenborging.nl Foundation.

The NVWA will continuously monitor the reliability of private quality assurance schemes. It will also continue to play a leading role at international level (including in respect of the Codex Alimentarius) with a view to providing an even more solid basis for this type of public-private partnership.

Modified supervision based on self-regulation has been applied in the hotel and catering sector for some years now. Private Body Control System (POCs) are used for this. These are private management and quality schemes that have been accepted by the NVWA and ensure that businesses meet the statutory or self-imposed, non-statutory requirements. Internal assurance, an objective assessment and adequate self-regulating and corrective capacity are characteristic features of the system. Hotel and catering businesses that have signed up to an accepted private control system, have actively reported to the NVWA and have no history of non-compliance may be eligible for reduced supervision. For those businesses, the NVWA merely keeps a "finger on the pulse" by means of spot checks. The NVWA regularly assesses the reliability of those businesses' systems through audits and inspections.[19]

2.7 The NVWA's task

Every Member State of the EU has one or more authorities engaged in the supervision and enforcement of food safety. The NVWA is the supervisory authority that monitors compliance with laws and regulations for food in the Netherlands. It is responsible for taking action in respect of risks pertaining to food safety and has the authority to do so.

In addition, the Netherlands Food and Consumer Product Safety Authority Independent Risk Assessment Act (*Wet onafhankelijke risicobeoordeling Nederlandse Voedsel- en Warenautoriteit*) stipulates that officers of the authority responsible for performing risk assessments, performing, or arranging the performance of, scientific research and providing solicited and unsolicited advice in the area of nutrition and food shall not perform any tasks connected with implementation, monitoring compliance, imposing administrative penalties or conducting investigations.

The NVWA mainly functions as a primary supervisory authority, but primary supervision of food safety is assigned to other supervisory bodies in some sectors. In such cases, the NVWA carries out secondary supervision. Examples of this include the supervision performed by the Netherlands Controlling Authority for Milk and Milk Products (COKZ) in the dairy sector and the Netherlands Controlling Authority for Eggs (NCAE) in the egg sector. Since the NVWA remains responsible for ensuring proper compliance with laws and regulations and must also render account in that regard, it monitors the supervision performed by those designated agencies. The NVWA collaborates with other state inspectorates (including the Social Affairs and Employment Inspectorate (SZW), the Inspectorate for Health and Youth Care (IGJ) and the Human Environment and Transport Directorate (ILT)) within the Inspection Council's group of organisations. It also regularly collaborates and exchanges information on many topics with other public services (e.g. Customs, the National Police and the Tax and Customs Administration).

The NVWA's mission and vision are translated into the following strategic objectives in its long-term policy and enforcement plan:

- to improve compliance;
- to monitor the safety of imports and exports;
- to contribute towards an informed and engaged society;
- to take decisive action in the event of unsafe situations and crises.

[19] https://www.nvwa.nl/onderwerpen/kwaliteitssystemen-zelfcontrolesystemen-en-toezicht-nvwa/inhoud/horeca-ambacht-zorginstellingen-retail-voedselveiligheid-haccp/zelfcontrolesystemen-horeca-ambacht-zorginstellingen-retail-en-toezicht-nvwa

Each component in a production chain bears its own responsibility for compliance with laws and regulations and therefore for ensuring the safety of the foodstuff concerned. It is the NVWA's task to carry out active supervision and take strict enforcement action when that responsibility is not met. The NVWA's supervision is aimed at fostering and, where necessary, enforcing compliance with laws and regulations (risk management). This includes:

- detecting and advising on new and existing hazards and risks (risk assessment);
- providing businesses, consumers and citizens, and also policy-makers with information on new and existing hazards and risks (risk communication).

The NVWA's guiding principle when performing its supervisory task can be summarised as being "lenient whenever possible and tough when required".[20] The NVWA operates on the basis that it can safely rely on businesses that live up to their responsibilities, i.e. businesses that have, among other things, demonstrated in the past that they comply with the rules. When companies betray the confidence placed in them and fail to live up their responsibilities, the NVWA will take action. It does this not only to compel the business concerned to comply with the rules, but also to set an example for other businesses. A business failing to comply with the statutory provisions will face an intervention in accordance with the NVWA's intervention policy. [21] This intervention policy describes how the NVWA penalises contraventions of laws and regulations identified during monitoring, checks, inspections and product testing and prevents their repetition. Examples of interventions include a written warning, the imposition of a fine or shutting down or closing a business.

As the competent authority, the NVWA can deploy any control or supervisory methods and tools as the situation demands. Examples of methods include inspections, audits, system supervision, sampling, checks, enforcement, detection, screening and verification.

The NVWA is committed to increasing compliance with food safety laws and regulations, against a background of a dwindling budget and increasing social complexity, including digitisation and globalisation. The NVWA is unceasing in its efforts to identify the most effective and efficient means of supervising food safety. Alongside the traditional methods of enforcement through the issuing of, among other things, written warnings, reports of findings and official reports, there will be greater emphasis on other ways of influencing behaviour based on the compliance risk management strategy cycle.

Compliance risk management strategy cycle

The NVWA performs its supervisory task with due regard for the available resources relative to the quantity of different foodstuffs and the numbers of locations where they are produced, stored and sold. The NVWA makes choices based on its knowledge of businesses' compliance behaviour and the risks inherent in products and production chains to allow it to perform its supervisory task as efficiently as possible. In this process, it uses the compliance risk management strategy cycle approach. The goal of this approach is to tackle the greatest risks in the food supply chains effectively and efficiently through enforcement, improve access to information and update supervision. The compliance risk management strategy cycle combines governance, development and implementation in order to ensure that this goal is achieved. At strategic level, we determine what the greatest risks are, *where* we should intervene in the chain and *what* results the result should be. At tactical level, we determine *how* risks can be eliminated or reduced and evaluate the results. At operational level, we determine *how to go about* implementation and monitor the progress.

[20] From the supervisory framework for the NVWA: https://www.rijksoverheid.nl/documenten/richtlijnen/2015/10/16/toezichtkader-nvwa

[21] https://www.nvwa.nl/over-de-nvwa/hoe-de-nvwa-werkt/toezicht-maatregelen-en-boetes/interventiebeleid

2.8 The NVWA's reflective role

"Identifying relevant developments, public risks and ambiguities or gaps in laws and regulations is seen as one of the core tasks of a modern, independent supervisory authority. The political, administrative and social debate about government oversight has produced a reasonable consensus on the core values of proper supervision: it should be independent, unbiased, reflective, agenda-setting, proficient and transparent."[22]

With an instruction from the Prime Minister, the state inspectorates, including the NVWA, were given an agenda-setting and signalling role as from 1 January 2016. The Food Safety Statement is a contribution towards that reflective role.

As part of its reflective role, the NVWA also has other means of influencing the system. One example is the "HUF assessment" (Enforceability, Practicability and Fraud Resistance assessment), through which the NVWA assesses the enforceability, practicability and fraud resistance of new laws and regulations.

Integrated risk analyses (IRAs)[23] are made up of a combination of a scientific risk assessment and the representation of its data on compliance and fraud. The representation of supervision and fraud is based on the NVWA's enforcement and investigative activities. An IRA provides an insight into the parts of the chain where the main risks occur, enabling us to take targeted measures. Where risks occur as a result of the way in which the system has been set up, the NVWA will make efforts to modify the system, rather than increasing the frequency of supervision, for example.

The NVWA published the IRA of the red meat chain in 2016. That was followed by the the dairy chain, the poultry meat chain and the egg chain.

2.9 The supervision of food safety

The NVWA supervises the entire supply chain, focusing on both plant-based and animal-based food production. This therefore goes far beyond only supervising foodstuffs sold to consumers and served in hotel and catering establishments. The supervision of the supply chain consists of, among other things, supervision of crop production, plant protection products, animal husbandry, antibiotics, animal feed, the slaughter process, animal by-products, the production of foodstuffs and the import controls for foodstuffs originating in countries outside the European Union. The NVWA also monitors fraud and aspects related to fair trade and honesty in the information provided to consumers.

There are mandatory controls within the entire food production chain to ensure that plants and animals are healthy and that foodstuffs and animal feed are safe, of good quality and correctly labelled, and that they meet the strict EU standards. The supervision performed in the Netherlands focuses not only on food that is produced, marketed and consumed here, but also on food imported into and/or exported from the Netherlands. The supervision of exports benefits not only consumers in other countries, but also the business community in the Netherlands. After all, safe export products enhance the export position of Dutch businesses.

The majority of the total food imports comes from the EU, with the exception of fruit imports, only 30% of which come from EU countries.[24] With regard to imports, the NVWA monitors high-risk foodstuffs that are introduced into the country through Schiphol international airport and international ports such as Rotterdam. Those ports are part of the EU's border. EU legislation prescribes which percentage of consignments are subject to mandatory controls and on which substance or substances or microbiological parameters the controls should be based for certain combinations of foodstuffs and country of origin. The NVWA therefore expends more supervision capacity on some combinations than others. This is the case whenever there is an increased chance of exceeding the the statutory limits for harmful substances or for microbiological hazards.

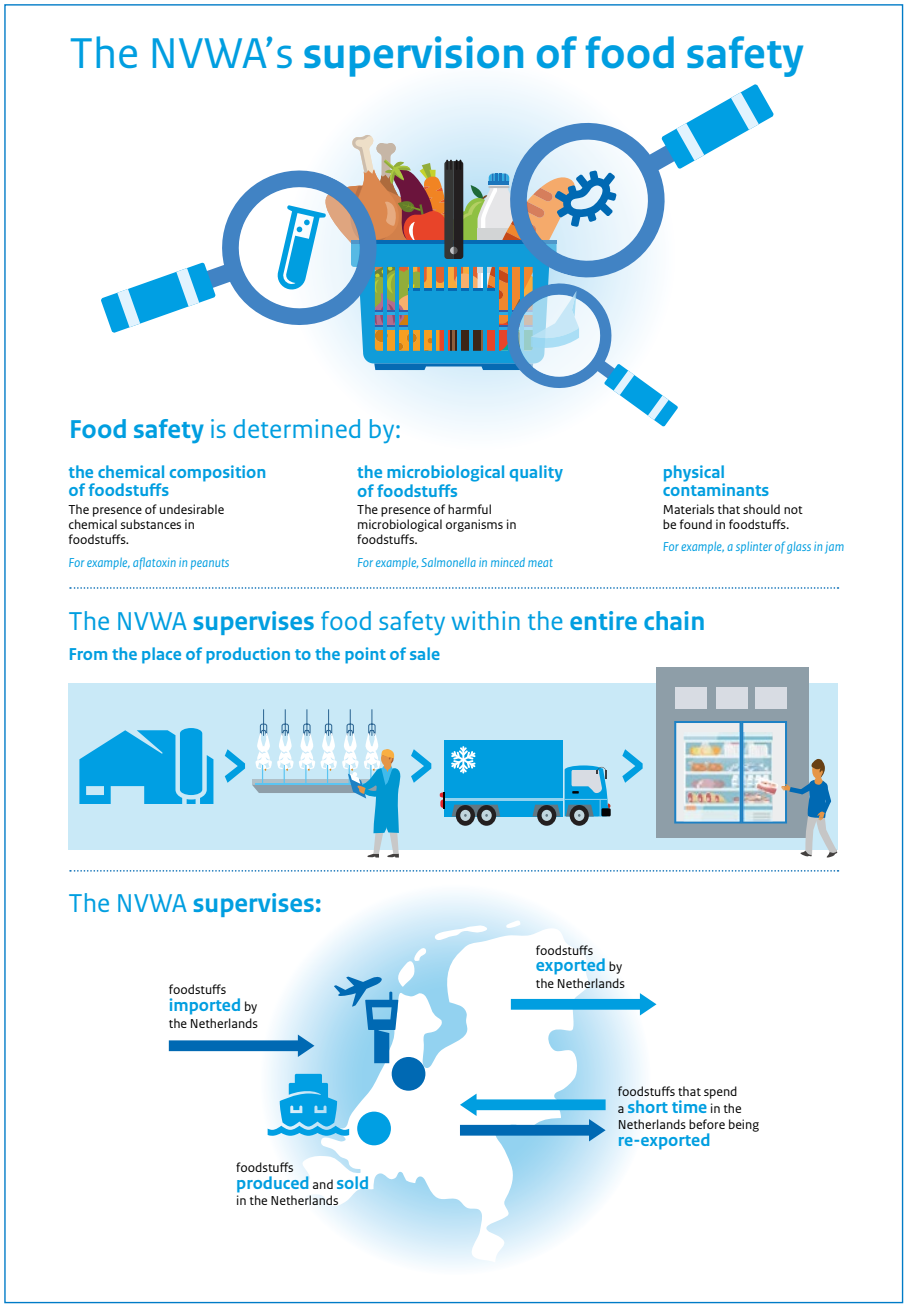
[22] From "the future of supervision", Inspection Council, 2016.

[23] https://www.nvwa.nl/over-de-nvwa/hoe-de-nvwa-werkt/integrale-ketenanalyses

[24] Van der Knijff, et al. 2011.

A sizeable amount of the food is produced, marketed and sold by multinationals. There are also thousands of other businesses throughout the world that influence the food safety of the foodstuffs consumed in the Netherlands.
Many of the businesses supervised by the NVWA are well established and have built up a name for themselves. On the other hand, there are also businesses that can barely be identified as such or are not known to the NVWA. This mainly includes companies that conduct their business online. Other businesses are difficult to track because their ownership changes in short order, and there are businesses that are difficult to categorise because of the diversity of their activities. All this makes developing and performing supervision a complex and substantial task.

Figure 2



To enable us to achieve maximum impact with limited resources, the NVWA's supervision is largely risk-based; a small part of our capacity is used for representative studies. Risk-based supervision is based on analysis of the information available to the NVWA. Businesses with a perceived increased risk are selected in light of that information. The selected businesses are then subjected to closer supervision.

The NVWA's supervision process consists of three layers:

- checks and sampling/analysis, where a pronouncement is made on a single animal, product, batch or business;
- inspection, where a pronouncement is made on the current state of one or more factory processes or activities. For example, are operations carried out in hygienic conditions?
- audit (system supervision), where a pronouncement is made on the performance of a food safety or other system (including the HACCP approach) over a fairly long period of time. For example, have the products produced by the business been safe in the past, is it currently producing safe products and will it also do so in the future?

During an audit, we will also establish whether a business has tested foodstuffs adequately itself and whether the results are reliable. The NVWA can also take samples for laboratory testing in doing so.

Thanks to the risk-based approach, the budget available for supervision can be put to the most efficient use. However, since this involves inspections at selected business locations, the results of risk-focused supervision are not representative of the sector as a whole or of all foodstuffs. This must be taken into account when making pronouncements on the compliance level or the non-compliance rates of an entire sector or product group in the Dutch setting.

The following are important sources of information for the NVWA when we perform our risk-focused supervision:

- results of sample analyses that we perform or arrange to be performed in order to obtain a general picture or to investigate detected hazards and risks more closely. To this end, we take samples of foodstuffs from the entire supply chain, which are then tested for pathogens and chemical substances. This produces a picture of the compliance level and identifies the pathogens and chemical substances present in a particular foodstuff, the frequency with which and quantity in which they occur, as well as where they occur in the supply chain;
- reports made by food business operators to the NVWA. When FBO's test the safety of foodstuffs they have placed on the market and pathogens or chemical substances are revealed in a quantity that may be harmful to public health, or if they have obtained knowledge to that effect in another way, the business concerned is obliged to report this to the NVWA (and the relevant upstream supplier or suppliers and buyer or buyers).[25] In cases involving a harmful foodstuff, the NVWA expects a rapid recall operation and "prompt" notification accompanied by information to enable the company that produced or sold the foodstuff to be traced, as well as details of the action taken by the business concerned. The NVWA will monitor and assess those actions and, where necessary, impose additional measures on the company to ensure that the harmful foodstuffs are withdrawn from the market and to prevent repetition. The terms "prompt" and "necessary tracing and accountability information" are not specified in laws and regulations. In practice, this can lead to discussions between the NVWA and the business community concerned, resulting in a possible delay in the recall operation;
- If the hazard or risk to public health is limited or non-existent, the efforts expended may also be less comprehensive. Where possible, the matter will be dealt with by telephone and the NVWA's efforts will initially be confined to monitoring from a distance. The case can also be revisited during regular inspections or audits; [26]
- notifications based on the RASFF system.[27] The official supervisory authorities of the EU Member States use this system to inform each other of high-risk foodstuffs that are being sold to other Member States. This system also provides information on the actions taken in such situations, such as the withdrawal of the concerned product from the market;
- reports made by consumers and organisations. These are an important source of information for the detection of unsafe foodstuffs or situations, and therefore for positive action on the part of the supervisory authorities.

[25] Under Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

[26] NVWA008-WV002: Working method for supervising reporting, tracing and recall operations from the Consumer & Safety (C&V) division.

[27] https://ec.europa.eu/food/safety/rasff_en

Food safety inspections at request

Some inspections are carried out by the government at the request of businesses. Products and live animals are assessed on the basis of requirements specifically established with a view to being:

- able to place them on the market within the EU;
- able to export them outside the EU;
- able to import them into the Netherlands or the EU from third countries.

Inspections can also consist of an assessment of the business or the production site, or of other tests.

If it is established that a consignment to be checked meets the statutory requirements , this will be declared in the export certificate accompanying the consignment. Compliance with the requirements set helps to ensure food safety. The receiving party and the authority in the country of destination rely on the guarantees given in the export certificate. In addition, they check to make sure that no irregularities that could have a negative impact on the food safety of the checked consignment have occurred during the transport phase.

Food fraud investigation

The NVWA has its own specialist investigation service, the Intelligence and Investigation Service (IOD). A specialist investigation service like the IOD, which is part of the supervisory authority and has far-reaching powers, is unique in Europe.[28] The IOD is specifically intended to investigate criminal offences, and focuses mainly on complex, supply chain-related, organised and international crime that:

- impairs the integrity of food;
- jeopardises the safety of food and consumer products;
- harms the health of animals and plants.

In addition, the IOD uses its expertise to support the supervision and enforcement divisions of the NVWA in combating and preventing fraud.

Fraud Expertise Unit

In 2014, the Dutch Safety Board concluded in the report on risks in the meat supply chain[29] that the NVWA pays insufficient attention to investigating and tackling food fraud and lacks the capacity to do so. The conclusion prompted the NVWA's Fraud Action Plan improvement programme. This programme involves, among other things, the development of a Fraud Expertise Unit (FEK), a pilot for which was launched in April 2016. This unit combats fraud through the combined deployment of the IOD and the supervision and enforcement divisions of the NVWA. The IOD advises FEK inspectors carrying out supervision on how to recognise and prove fraud and provides them with guidance on the application of criminal law and economic criminal law and on how to calculate illegally obtained profits. .

2.10 The consumer's responsibility

Consumers also bear responsibility in the area of food safety. The consumer is responsible for storing and preparing foodstuffs properly after having purchased them. In principle, the consumer phase in the food supply chain is not subject to supervision. However, by providing consumers with sound information, communicating with them about hazards and risks and asking them to report indications of unsafe situations promptly, the NVWA is promoting food safety in this phase as well.

[28] See, for example: UK Government, Department for Environment, Food & Rural Affairs. Elliot review into the integrity and assurance of food supply networks – final report. A national food crime prevention framework. London, July 2014.

[29] https://www.onderzoeksraad.nl/nl/onderzoek/1478/risico-s-in-de-vleesketen

Many people fall ill because they store and prepare food incorrectly. A substantial number of food-borne infections take place at home. To reduce such instances of sickness, it is essential that consumers be properly informed about the correct way of storing and preparing food. This information is provided through clear indications on the labels of packaged foodstuffs and also through information campaigns run by the government and consumer organisations. The government-subsidised Netherlands Nutrition Centre is a key player when it comes to providing consumers with information.[30] The Netherlands Nutrition Centre advises consumers on how to prevent a food-borne infection. For more information, you can read the published fact sheet "Hygiene and food-borne infections", among other things.[31]

A consumer who has fallen ill after having consumed foodstuffs or who observes a situation where unsafe foodstuffs could potentially be placed on the market can, should and is in some cases obliged to report this to the NVWA. Examples of matters consumers can report include inadequate hygiene in hotel and catering establishments and the presence of glass in foodstuffs. The NVWA is available to receive notifications and complaints seven days a week, 24 hours a day, through the NVWA website and a telephone number.[32]

In addition, consumers must remain alert and monitor the reliability of businesses and people offering food. Consumers can be expected to critically examine the food they buy and consume as well as the place where they buy it. If they buy food from sources outside the normal trading channels, they are taking additional risks in that they are buying food from a company that might be unknown to the NVWA and not subject to NVWA supervision.

Another course of action open to consumers is to eat a varied diet and to eat in moderation. That way, any risks will be spread, and will usually prevent ingesting an excessive amount of the harmful substance present.

2.11 Developments in the system

New European Control Regulation

Further harmonisation of the enforcement of legislation in Member States is planned at EU level. The new European Control Regulation will enter into full force on 14 December 2019. It will require Member States to carry out controls not only in respect of animal feed and foodstuffs, but also in respect of, among other things, animal- and plant health and food fraud. The new European Control Regulation will help to strengthen the system by extending the duty to register and the authorisation requirement of those subject to the NVWA's supervision, including businesses that trade in animal by-products. The Regulation should provide the NVWA with a clearer overview of the businesses it should supervise. However, this will be conditional upon ministries, the supervisory authority and the business community concerned consulting and implementing the new European Control Regulation.

Extending the system of statutory limits

Expectations are that there will also be further supplementation of specific regulations at EU level. Among other things, this will involve the inclusion of additional microbiological criteria and maximum limits for contaminants. This development is intended to help ensure an even more solid guarantee of food safety in the EU.

The enforcement of maximum limits through sampling projects will require resources for the NVWA laboratory to perform analyses and the development and validation of new analysis methods. At present, for some substances for which maximum limits have recently been established, no validated analysis method does yet exist. The NVWA and RIKILT are working on this together. This cooperation also offers the NVWA the opportunity to test samples, or have them tested, using these new methods, once they have been developed.

More choices regarding the use of the NVWA's resources will have to be made in the future, to ensure optimum food safety.

[30] www.voedingscentrum.nl

[31] https://www.voedingscentrum.nl/Assets/Uploads/Documents/Factsheet%20Hygiëne%20en%20voedselinfecties.pdf

[32] https://www.nvwa.nl/over-de-nvwa/contact/klacht-indienen-bij-de-nvwa and telephone number: 0900-0388.

The question is which limits the NVWA should enforce, or continue to enforce, and whether the NVWA should continue to monitor in a generic sense any exceeding of those limits in foodstuffs, or whether enforcement action should be exclusively risk-based. The supervision of food safety is already mainly risk-focused in nature, meaning that the NVWA's attention is concentrated on the most high-risk chemical substances and microbial agents. The NVWA is also considering whether there are any other effective and efficient ways of enforcing the statutory limits, for example by making better use of the options offered by administrative controls.

Laws and regulations for vitamins and food supplements

European laws and regulations contain no minimum and maximum levels for vitamins, and those for food supplements (including vitamin preparations) and herbal preparations are not harmonised. For instance, thanks to national legislation, some ingredients are currently permitted in some Member States and not in others.

Communications on food safety

It has become apparent in recent years that food business operators do not always inform consumers, or do not always inform them in time, when foodstuffs that are harmful to public health have been placed on the market. Since it is important that consumers are alerted as quickly as possible, the NVWA passes on food safety warnings through the NVWA-website, Twitter and Facebook. The NVWA is increasingly and more frequently sharing available information with the public in the "Public Disclosure" process. Examples of this can be found, in among others, the hotel and catering industry area.[33]

2.12 Conclusion

Because of the system of laws and regulations, supervision and enforcement, food safety in the Netherlands is generally ensured, since the system provides sufficient clarity with regard to standards, responsibilities, enforceability and interventions in the event that unsafe products do find their way onto the market. Practical experience from supervisory and investigative procedures and developments in the social arena related to food safety require continuous reflection on the system.

From the NVWA's perspective, interventions in the event of unsafe products nevertheless reaching the market could be more efficient and faster if the supervisory authority were to be provided with clear guidance enabling it, where necessary, provide information about internal traceability.

[33] https://www.nvwa.nl/onderwerpen/inspectieresultaten-horecagelegenheden

3 The NVWA's supervisory activities: results and findings

3.1 Introduction

This chapter will deal first and foremost with the results of the risk-based supervision performed by the NVWA in 2015 and 2016 in respect of businesses in the food supply chain.

Those results provide an insight into the number of businesses inspected per (sub)sector and the number of businesses where one or more instances of non-compliance were identified during an audit or inspection. After that, the nature of the most common instances of non-compliance at the level of production chains and branches will be discussed.

This chapter will then deal with the results of analyses of samples taken from foodstuffs, animal feed and animal by-products by the NVWA in 2015 and 2016.

Those results contain the numbers of samples analysed and the percentage of non-compliant results.[34] Specific instances of non-compliance feature in a number of product groups. A description of the nature of the most common instances of non-compliance at the level of foodstuffs is provided for those cases. Finally, an overview is given of the findings in respect of RASFF notifications.

3.2 Results of the risk-based supervision of food business operators

A large number of companies was audited and inspected with regard to their compliance with the basic principles of the HACCP system in 2015 and 2016. During those inspections, the businesses were also assessed to establish the extent to which they complied with the basic conditions for hygiene, architectural state and pest control.

[34] Non-compliant results refer to samples that do not meet the statutory provisions or to the outcomes of an analysis where the maximum limit for a substance has been exceeded.

Table 1 Results of the risk-based supervision (ordered by subsector) in 2015

	Number of businesses	Number of inspected businesses	Number of non-compliant businesses	Percentage of non-compliant businesses relative to the number of businesses inspected
Businesses involved in the foodstuffs of animal origin industry	803	614	251	41
Businesses involved in the foodstuffs of plant origin industry	1,228	455	129	28
Businesses involved in the compound foodstuffs industry	5,055	1,435	459	32
Businesses involved in the food supplements, herbal preparations and foodstuffs intended for particular nutritional uses industries	7,316	656	209	32
Business involved in the animal feed industry	8,746	768	114	15
Businesses involved in the animal by-products industry	90,216	2,366	526	22
Business involved in the fishing industry	613	544	291	53
Businesses involved in the dairy industry [35]	18,988	903	125	14
Businesses involved in the egg industry [36]	1,107	436	23	5
Businesses involved in the hotel and catering industry	50,000	9,124	4,398	48
Artisanal businesses (including itinerant traders)	25,500	2,246	1,056	47
Healthcare institutions	10,000	175	66	38
Retailers	20,000	1,378	560	41

[35] The businesses involved in the dairy industry named in Tables 1 and 2 are monitored by the COKZ (primary supervision; the NVWA is responsible for secondary supervision).

[36] The businesses involved in the egg industry named in Tables 1 and 2 are monitored by the NCAE (primary supervision; the NVWA is responsible for secondary supervision).

Table 2 Results of the risk-focused system supervision (ordered by business group) in 2016

	Number of businesses	Number of inspected businesses	Number of non-compliant businesses	Percentage of non-compliant businesses relative to the number of businesses inspected
Businesses involved in the foodstuffs of animal origin industry	819	632	271	43
Businesses involved in the foodstuffs of plant origin industry	1,251	435	149	34
Businesses involved in the compound foodstuffs industry	5,168	1,455	433	30
Businesses involved in the food supplements, herbal preparations and foodstuffs intended for particular nutritional uses industries	7,106	591	240	41
Business involved in the animal feed industry	8,746	1,580	251	16
Businesses involved in the animal by-products industry	90,513	2,771	415	15
Business involved in the fishing industry	837	530	225	42
Businesses involved in the dairy industry	18,603	927	163	18
Businesses involved in the egg industry	1,103	460	25	5
Businesses involved in the hotel and catering industry	60,000	10,195	6,105	60
Artisanal businesses (including itinerant traders)	25,500	3,245	1,473	45
Healthcare institutions	10,000	136	12	9
Retailers	21,000	1,384	584	42

The above tables show that, in 2015 and 2016, instances of non-compliance were identified in between 5% and 60% of the businesses assessed. A small number of the cases involved serious[37] violations. The percentage of non-compliant businesses varies from sector to sector as well as by year. Owing to the risk-based nature of our supervision, the NVWA did not perform any strictly representative inspections. It is therefore impossible to indicate the average compliance rate for each individual sector.

Failure to comply with HACCP requirements or instances of non-compliance in terms of the architectural state, pest control and the general hygiene rules do not necessary result in a health risk. Nor does exceeding of a maximum limit or other statutory criterion always produce an acute risk to health. That depends on which statutory limit has been exceeded. The maximum limits chosen will often be so strict that exceeding the limit slightly will not result in a health risk. Moreover, action to prevent any unsafe foodstuff from being sold and consumed is taken after an instance of non-compliance is identified.

[37] See basic food safety data sheets, NVWA December 2017.

Figure 3


The Food Safety Statement
The total number of businesses, inspected businesses and non-compliant businesses in 2015 and 2016.
2015
Total number of businesses
239,572
21,100
8,207
2016
Total number of businesses
250,646
24,341
10,346

Figure 4


The Food Safety Statement
The number of businesses, inspected businesses and non-compliant businesses in 2015 and 2016 for each domain.
2015
90,216
2,366
526
Animal by-products
50,000
9,124
4,398
Hotel and catering businesses
25,500
2,246
1,056
Artisanal businesses
20,000
1,378
560
Retail
18,988
903
125
Dairy
10,000
175
66
Healthcare institutions
8,746
768
114
Animal feed
7,316
656
209
Food supplements, herbal preparations and foodstuffs intended for particular nutritional use
5,055
1,435
459
Compound foodstuffs
1,228
455
129
Foodstuffs of plant origin
1,107
436
23
Eggs
803
614
251
Foodstuffs of animal origin
613
544
291
Fish
2016
90,513
415
2,771
Animal by-products
60,000
10,195
6,105
Hotel and catering businesses
25,500
1,473
3,245
Artisanal businesses
21,000
584
1,384
Retail
18,603
163
927
Dairy
10,000
12
136
Healthcare institutions
8,746
251
1,580
Animal feed
7,106
240
591
Food supplements, herbal preparations and foodstuffs intended for particular nutritional use
5,168
433
1,455
Compound foodstuffs
1,251
149
435
Foodstuffs of plant origin
1,103
460
25
Eggs
819
632
271
Foodstuffs of animal origin
837
530
225
Fish

3.3 Results of testing for chemical, microbiological and physical hazards in foodstuffs

3.3.1 Introduction

In 2015 and 2016, samples were analysed to establish the occurrence of certain groups of chemical substances and microbiological parameters. Testing was also carried out in smaller projects, including for contaminants (like heavy metals, PAH's, 3-MCPD, acrylamide and certain biocides) and additives (like benzoic acid, sulphites and Sudan dyes). The results of these tests have been incorporated into the information sheets accompanying the present Food Safety Statement.

An analysis package with which one or more microorganisms or substances were analysed was used for the samples subjected to both microbiological and chemical analysis.

The NVWA took samples for a variety of reasons. Some sampling was prompted by the adopted systematic approach mentioned earlier. If during an audit or inspection was concluded that a follow-up test in a laboratory was required, a sample was taken from the business, which was subsequently analysed for the presence of specific substances or microorganisms. Other sampling was prompted by what are known as the "National Plans". On the basis of those plans, foodstuffs, animal feed and animal by-products were tested for certain microbiological parameters and chemical substances. The majority of those samples was taken risk-based. In some projects, random samples were taken so that the compliance level could be determined. Finally, the NVWA carried out supervisory activities where samples were taken in connection with specific projects, import controls and reports.

3.3.2 Findings in respect of the testing for chemical hazards

Testing of imported foodstuffs from high-risk countries

Among other things, the National Plans focus on imports of high-risk products from high-risk countries. Furthermore, some of the import controls are obligatory. For example, the combinations of product group or groups, substance and country of origin as well as the percentage of consignments that must be sampled and analysed and the substances or microorganisms for which they must be analysed are explicitly included in Commission Regulation (EC) No 669/2009 of 24 July 2009 implementing Regulation (EC) No 882/2004 of the European Parliament and of the Council as regards the increased level of official controls on imports of certain feed and food of non-animal origin and amending Decision 2006/504/EC. Regulation (EC) No 882/2004 of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules includes a similar list containing the obligatory control percentages for product-country combinations in relation to aflatoxins.

Administrative controls carried out at businesses revealed that certain batches of unsafe foodstuffs that are "in transit" (i.e. have already been physically introduced into the EU, but have not been cleared administratively) are not reported to the NVWA. Examples include consignments of ginger or nuts in which a high level of aflatoxin was found. Since such batches of foodstuffs have not yet formally been imported into the EU, they are outside the NVWA's control. Nor do businesses report such batches to the NVWA under the General Food Law Regulation (GFLR report). The NVWA is therefore unable to enter a notification in the RASFF system, which creates the risk of those batches entering the European Union market anyway. The NVWA is discussing this problem with policy-makers and within the wider EU context in order to find solutions.

Mycotoxins

In 2015 and 2016, 1,157 and 1,338 samples, respectively, of different categories of foodstuffs (nuts, seeds, spices and dried fruit) were analysed as part of the obligatory import controls. Taking into account measurement uncertainties, 59 and 70 samples, respectively, contained levels of mycotoxins (mainly aflatoxin) above the statutory limit; this represents between 2% and 10% of all samples for each foodstuff category. The batches from which those samples were taken were not permitted to enter the EU.

In 2015 and 2016, 2,399 and 2,207 samples, respectively, were taken for testing for mycotoxins (including aflatoxins and ochratoxin A) as part of the National Control Plan and parallel to the obligatory import controls. The foodstuffs were selected on a random basis, and also based on the risk they represent, i.e. more samples were taken of foodstuffs or foodstuff categories in which the statutory limit is often found to have been exceeded.

Table 3 Complete overview of the results of the testing of samples for mycotoxins in 2015 and 2016

	2015 and 2016 (the numbers have been aggregated)		
Mycotoxins	**Number of samples**	**Number > ML**	**Average % > ML**
Various foodstuffs	7,101	274	3.9%

Plant protection product residues

About 4,000 samples of vegetables and fruit are tested every year for plant protection product residues. About 3,000 samples are tested for the purposes of the National Control Plan. Some of the sampling is representative and some is risk-based.

Table 4 Overview of the results of the testing of samples for plant protection product residues in 2015 and 2016

Market segment	**Number of samples**	**% above the MRL**	**Number of different residues per sample**
Representative sampling			
Retail chains	1,243	1.0	2.2
Major wholesalers and processing businesses	456	2.4	2.2
Small wholesalers and processing businesses	1,453	3.6	2.3
Market research in respect of small greengrocers/ general stores	285	3.5	1.8
Total	**3,437**	**2.5**	
Risk-focused sampling			
Wholesale (sampling based on risk profile)	839	9.7	2.4
Import (National Control Plan)	1,051	16.1	2.9
Import (Commission Regulation (EC) No 669/2009)	1,647	9.2	2.5
Total	**3,537**	**11.4**	

As part of the obligatory import controls (Regulation (EC) No 669/2009), samples of various categories of vegetables and fruit were analysed in 2015 and 2016. Taking into account measurement uncertainties, the level of one or more plant protection product residues was higher than the MRL in an average of more than 4% of the samples. However, the percentage of samples that exceeded the MRL differed per specific product-country of origin combination, and in some cases amounted to between 30% and 60% for a particular foodstuff-country combination. The batches from which those samples were taken were not permitted to enter the EU.

3.3.3 Findings in respect of the testing for microbiological hazards

Industrial food businesses' compliance with Commission Regulation (EC) No 2073/2005 of 15 November 2005 on microbiological criteria for foodstuffs improves every year. That said, one in five of those businesses still fails to fully satisfy some aspect of the rules, such as the minimum number of obligatory samples or the performance of shelf life studies.

Microbiological sampling conducted in the years 2014/2015 and in 2016 revealed that roughly 0.6% to 0.7% of all batches tested failed to satisfy one food safety criterion. Those batches were deemed harmful. In such cases, the producer must withdraw harmful batches from the market and the NVWA will also enquire into the cause and ensure that the producer takes measures to prevent repetition.

In 3.4% to 9.2% of batch analyses, the batch turned out not to meet a process hygiene criterion. In cases such as these, the batch is not harmful and is therefore not withdrawn from circulation (unless the producer's compliance with a food safety criterion was also unsatisfactory). The food producer will, however, be monitored or addressed as regards hygiene measures during the production process.

A remaining group of analyses focused on non-statutory criteria. They relate to pathogens present in lower quantities than those known to cause illness. The result was positive in 6.5% to 17.2% of the batches analyzed. Nevertheless, in a number of cases, an unsatisfactory result led to focused inspections at the producer's premises. That happened primarily when the pathogen Listeria monocytogenes was present.

The figures for both the process hygiene criteria and the non-statutory criteria differ to a slightly greater degree because there are bigger differences between the various types of food tested and the analyses chosen between 2014/2015 and 2016.

Table 5 Overview of the testing of samples for microbiological hazards in 2014/2015 and 2016

	Number of batch analyses of foodstuffs in 2014 and 2015	Number of batch analyses where the results were unsatisfactory	Percentage of unsatisfactory results (unsatisfactory batch analyses relative to the total number of batch analyses)
Food safety criteria	27,431	186	0.7%
Process hygiene criteria	1,134	39	3.4%
No statutory criterion*	16,993	2,929	17.2%

	Number of batch analyses of foodstuffs in 2016	Number of batch analyses where the results were unsatisfactory	Percentage of unsatisfactory results (unsatisfactory batch analyses relative to the total number of batch analyses)
Food safety criteria	15,893	98	0.6%
Process hygiene criteria	1,048	96	9.2%
No statutory criterion*	6,097	397	6.5%

* An unsatisfactory result for an analysis that is not linked to a statutory criterion means, for example, that a pathogen is present, but no statutory criterion is applicable or the level is below that prescribed by the statutory criterion.

Microbiological sampling is largely risk-based. Since food where there is a greater chance of an unsatisfactory result is more likely to be analysed, the actual percentages for all the food will probably be lower. However, it is not possible to determine how much lower the percentage will be under the NVWA's sampling programme.

3.3.4 Findings in respect of the testing for physical hazards

Materials that do not naturally belong in food, such as pests or pieces of glass, wood or metal, do not only leave the consumer feeling repulsed, but can also constitute a danger to human health. Physical hazards encountered when consuming food are caused by a physical object or by electromagnetic or radioactive radiation. The National Radioactivity

Monitoring Network (NMR) provides information about natural background radiation. In the event of a nuclear accident, the NMR will provide insight into the nature, scale and course of radioactive contamination so that the best possible protective measures can be taken for people and the environment. The NVWA will then check the food originating in the disaster area for radioactivity. The RIVM reports that Chernobyl, 30 years on from the accident in Chernobyl in 1986, has made a negligible contribution to exposure to radiation in the Netherlands over the past 20 years.

The shape and texture of food can present a direct, physical risk of choking primarily for young children, mentally disabled people who are inclined to bolt their food, the elderly and people with psychogeriatric problems. In 2015 and 2016 in the Netherlands, 90 and 75 people, respectively, died as a result of having inhaled and ingested food that led to an obstruction of the airways.[38]

VeiligheidNL is an independent centre of expertise whose mission is to prevent accidents by promoting safe behaviour. It has an Injury Information System (LIS) in which victims who have received treatment at a first-aid post of a number of hospitals in the Netherlands following an accident, an act of violence or self-harm are registered. This concerns a representative sample of hospitals. At the NVWA's request, the harm caused by ingesting insects, bones, glass, metal, plastic, rubber, stones or wood in food or drink was analysed. In 2016, there were an estimated 300 cases of choking. For the period between 2012 and 2016, it turns out that A&E Departments were visited for this reason most often by adults in the 40 – 60 age group, with people over the age of 80 being the group to attend least often by far. More than half of the cases involved choking on a fish bone. One quarter of the cases involved choking on a meat or poultry bone. Examples of other causes of choking include cocktail sticks and parts of packaging.[39]

The European Rapid Alert System for Food and Feed (RASFF[40]) reports cross-border hazards within Europe. A list of physical hazards in food reported through the RASFF in the years 2015 and 2016 gives an impression of the hazards occurring.

Table 6 Notifications of foreign bodies in food made through the RASFF by the Netherlands or where the Netherlands was involved in 2015 and 2016

	2015	2016
Glass	5	1
Metal	4	7
Plastic	5	9
Insects	7	3
Rodents	1	2
Stones	1	0
Wood	1	0
Other	1	5
Total	**25**	**27**

Most reports concern insects, plastic and small pieces of glass and metal that do not belong in the food. A similar picture is reflected in the reports received by the NVWA. In 2015 and 2016, the following numbers of reports of physical contaminants in foodstuffs were reported to the NVWA.

[38] Source: Statistics Netherlands (CBS) code W79.

[39] Krul I, Stam C. Food Safety and Physical Hazards. Details on A&E Department visits. VeiligheidNL, January 2018. Report number 712, project number 20.0066/029/001.

[40] https://ec.europa.eu/food/safety/rasff_en

Table 7 Number of reports made to the NVWA in 2015 and 2016 concerning foreign bodies in foodstuffs

	2015	2016
Glass	79	54
Metal	14	59
Plastic	52	161
Bone	4	10
Insects	14	17
Stones	13	14
Wood	2	5
Total	**178**	**320**

The NVWA reports do not provide a representative picture of all physical contaminants. In some cases, for example, there are several reports concerning the same foodstuff. Some reports involved unspecified objects or hairs in foodstuffs. However, the table does show that glass and small pieces of plastic and metal are the objects most frequently reported.

The likelihood of finding a physical hazard during inspections or laboratory tests is small. This is why the NVWA concentrates on monitoring to ensure that control measures in food safety systems are geared towards the prevention and/or elimination of foreign bodies. This involves, for example, assessing the architectural state and the food safety plan of food-preparation businesses.

3.3.5 RASFF notifications

The RASFF (Rapid Alert System for Food and Feed) is a notification system that Member States of the European Union use to notify each other whenever public health risks are detected in the food supply chain. Thanks to notifications in the RASFF, food safety risks can be addressed and products withdrawn from circulation in good time, before they cause any harm to the health of European consumers.

A Member State is obliged to make an RASFF notification when it becomes aware (is the first to become aware) that an unsafe product has been transported from or to another Member State. The Netherlands initiated 251 RASFF notifications in 2015, and 279 in 2016.[41] EU Member States made a total of 2,619 notifications for foodstuffs in 2015, and 2,581 in 2016. The Netherlands was involved in 242 notifications initiated by other Member States in 2015, and 261 in 2016.

Table 8 Number of RASFF notifications concerning food made by the Netherlands

	2015	2016
Alerts	65	97
Border rejection	123	114
Information for attention	37	44
Information for follow-up	26	24
Total	**251**	**279**

[41] https://webgate.ec.europa.eu/rasff-window/portal/

Table 9 RASFF notifications concerning food made by other Member States in which the Netherlands was also involved

	2015	2016
Alerts	165	147
Border rejection	10	15
Information for attention	21	26
Information for follow-up	46	73
Total	**242**	**261**

The majority of Dutch RASFF notifications in 2015 and 2016 (over 40%) concerned the rejection of batches of food at the border, mainly batches of nuts, seeds and poultry meat. The main reason for the rejection of nuts and seeds was an excessive level of aflatoxins, whereas Salmonella was the main reason for poultry meat being rejected. It is noteworthy that the notifications pertaining to other foodstuffs largely related to fruit and vegetables, meat and fish, and products derived from them.

3.3.6 Findings from the risk-focused supervision of labelling and nutritional and health claims

The composition and production of the "infant formulae, follow-on formulae and toddlers' milk" product groups are monitored through the primary supervision exercised by the COKZ. The NVWA holds primary responsibility for supervising the labelling and nutritional and health claims of these product groups.

Assessments carried out by the NVWA have revealed that the supervision of labelling in respect of infant formulae and toddler growth milk require a greater level of attention. In 2016, specific attention was devoted to toddlers' milk. Of the 25 types of toddler growth milk tested, 17 (68%) complied with the rules relating to labelling. The instances of non-compliance mainly concern the incorrect use of nutritional and/or health claims.

3.4 Conclusion

Where laws and regulations permit, the NVWA's supervisory activities are largely of a risk-based nature. The NVWA has detected instances of non-compliance with process regulations and hygiene requirements for a relatively high percentage of the businesses assessed. Nevertheless, it is crucial that the NVWA continues to supervise businesses to ensure that their processes and basic conditions are designed in a way such that they deliver safe food.

However, given the number of instances of non-compliance that the NVWA finds when analysing foodstuffs for chemical and microbiological hazards, foodstuffs in the Netherlands can to a large extend assumed to be safe. The vast majority of food placed on the market is safe. This can be derived from, among other things, the analysis results for the foodstuffs, animal feed and animal by-products tested by the NVWA.

This does not mean that an unsafe product will never appear or occur on the market. Despite the measures taken by businesses and the NVWA's supervision, foodstuffs that do not meet the statutory requirements nevertheless on occasion find their way onto the market. Once they have been placed on the market, food business operators and the NVWA have the responsibility, and power, to withdraw them from circulation and to notify consumers and trading partners. However, batches that have not yet been formally imported into the EU are beyond the NVWA's control, and the NVWA is likewise unable to take samples or enter notifications concerning them in the RASFF system, with the result that they may be marketed elsewhere in Europe. The NVWA is examining possible solutions to this problem with the policy-makers and with other European food authorities.

4 Food fraud

4.1 Introduction

This chapter begins with an explanation of food fraud, followed by an analysis of the opportunities to commit food fraud, the reasons for doing so and the resultant likelihood of its being committed.

Next, this chapter provides some information regarding the findings made by the IOD and the NVWA's enforcement divisions when investigating food fraud. This Food Safety Statement does not contain an exhaustive list of all of the cases. A food fraud investigation will often last several months or even several years. To avoid jeopardising criminal proceedings, no information concerning cases that are still being investigated has been included.

4.2 What is food fraud?

The intent behind and economic reason for food fraud places it in a different category from food safety incidents. Food fraud occurs in all manner of forms and in all kinds of sectors, not only in the present day, but also in the past. Food fraud can take place anywhere in the chain ("from farm to fork"), from fraud involving animal feed or antibiotics in the primary sector to the sale of Chinese mitten crabs contaminated with dioxins to hotel and catering establishments.

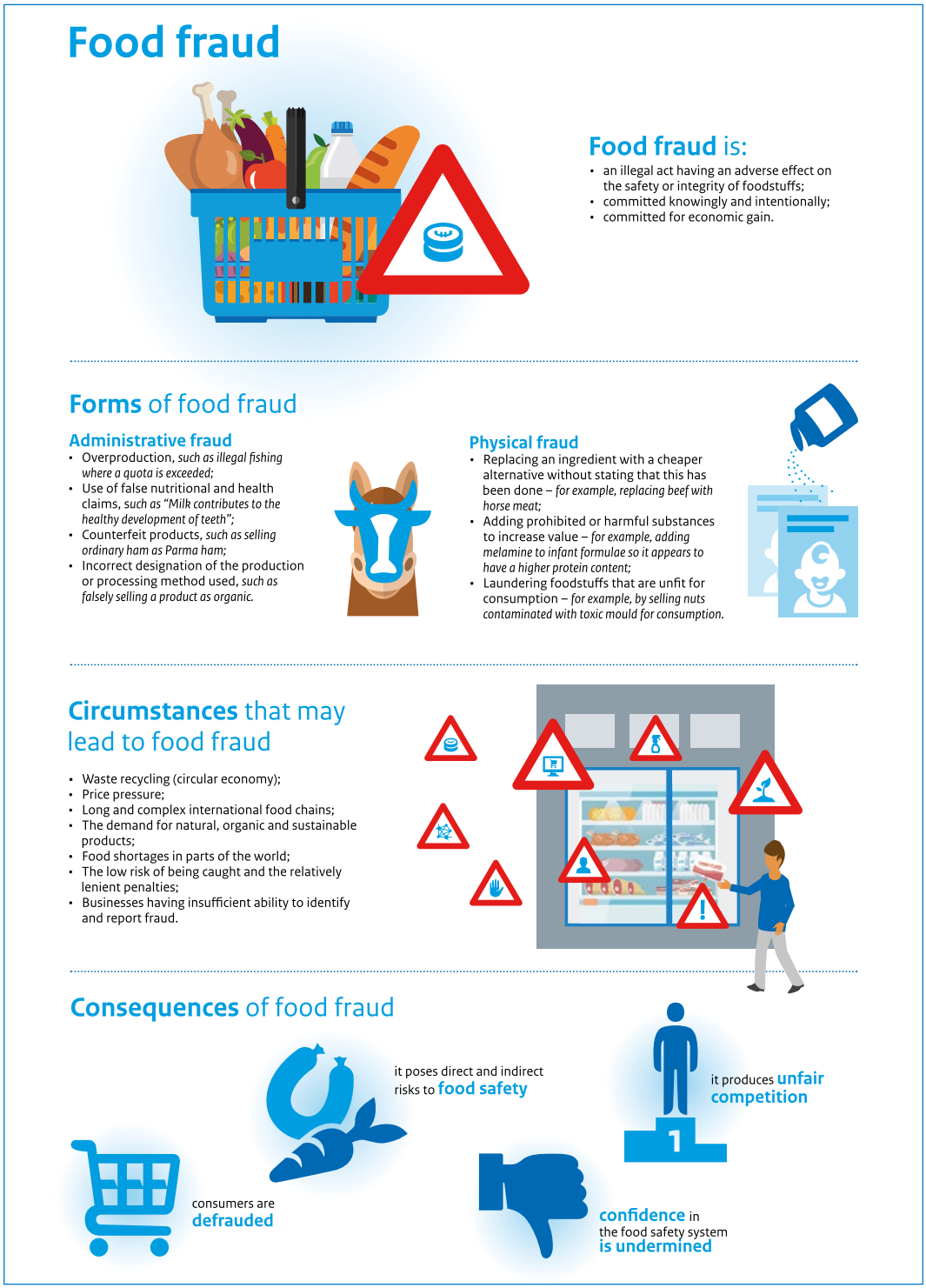
Food fraud and providing misleading information

The NVWA makes a distinction between the provision of misleading information and fraud. The Consumers' Association and Foodwatch award an annual prize for the most misleading product. In 2016, Foodwatch's winner was a fruit juice promoted as "the juice of blueberries and raspberries". In fact, the product consisted mainly of apple and grape juice and contained virtually no blueberry and raspberry juice.[42] The producer's sale strategy was to emphasise certain "luxury" or "healthy"

[42] https://www.foodwatch.org/nl/onze-campagnes/onderwerpen/misleidende-marketing/het-gouden-windei/winnaar-2016/

ingredients on the packaging. This is not an example of food fraud, but rather of the provision of misleading information, albeit with no concealment of the facts, because the producer has stated all the ingredients on the label and the contents and information provided will therefore match. In the case of food fraud, the fraudster deliberately attempts to conceal the actual contents, origin or production method.

Figure 5



Risk in terms of food safety

Food fraud does not necessarily result in an unsafe food product. Fraudsters will also try to prevent any such unwanted outcome, because they will attract attention if people fall ill. Fraud will result in a product where the facts do not add up, in that the contents and label will not match. This creates an unknown product or a product of unknown origin, whose potential as a food safety hazard is unclear. Food fraud involving the use of documents to indicate that the production method is sustainable or organic even though the food is perfectly ordinary appears to be a harmless practice. After all, the food is of normal quality. However, this type of fraud will also always pose indirect risks. Businesses deceive each other, the consumer is misled, checks cannot be carried out correctly and it will be difficult to recall a product if there does happen to be something wrong with it. This presents a risk of those products finding their way to consumers and causing them to fall ill. That is what happened in a case of fraud where shellfish were sold under a quality mark. In truth, the business had falsified the origin of the shellfish in the accompanying documents. By committing fraud, the trader was able to sell more shellfish with that quality mark. The fraud was only uncovered after consumers in several countries fell ill. Other examples of food fraud involving a potential food safety risk include the sale of chicken fillets to which water had been added without that being stated on the label, or a Russian salad containing less meat than was stated on the label.

Food fraud poses a direct food safety risk if a fraudster conceals the fact that a product contains substances representing a risk to consumers. Cases where the fraudster changes the origin of a product to conceal the fact that it originates in a country or area where the food safety risks are greater also constitute a direct risk.

The scale of food fraud

Fraudsters make active attempts to remain out of the inspectorates line of sight, so it is impossible to make any pronouncements on the scale of food fraud. Food fraud is and remains a silent threat. Global estimates indicate that between 5% and 10% of food is the subject of fraud. There is much money to be made with food fraud. For instance, at the end of 2016, the District Court of Breda ordered meat trader Jan. F. to repay EUR 2.6 million for selling horse meat as halal beef. That sum corresponds to the calculation of the illegal profit made by the meat trader.

As a result of the NVWA's Fraud Action Plan improvement programme,[43] food fraud cases that would previously have remained hidden are now coming to light. This confirms the impression that there is more going wrong than would appear at first glance. The increase in the number of indications to do with food fraud does not necessarily mean that food fraud is more prevalent now than was previously the case. The increased attention paid to food fraud and the greater opportunities for detecting such fraud have also prompted an increase in the reporting of cases of food fraud. However, the NVWA has noted developments causing us to conclude that opportunities to commit food fraud are on the rise.

4.3 Opportunities to commit food fraud are on the rise

The NVWA has noticed that the opportunities to commit food fraud and its profitability have increased. Various social developments, including the circular economy ("there is no such thing as waste"), price constraints, longer and more complex food supply chains, trends such as natural and organic food, clean labelling and enhancing the sustainability of supply chains appear to be the main reasons for this. Food shortages in different parts of the world and the concomitant higher food prices have likewise resulted in increased opportunities for food fraud.

Europol indicates that the perpetrators of organised crime – in southern Europe in particular – have discovered food fraud.[44] This form of fraud is profitable, the chance of being caught is low and the penalties are relatively lenient. The free circulation of goods on the internal European market makes it relatively easy for fraudsters to operate across borders.

[43] https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/brieven/2017/05/16/zesde-voortgangsrapportage-plan-van-aanpak-nvwa/zesde-voortgangsrapportage-plan-van-aanpak-nvwa.pdf

[44] https://www.foodlog.nl/artikel/fraude-met-biologische-producten-groeit-in-europa/

Dutch consumers and businesses are making increasing use of the internet to buy and sell products. Expectations are that this trend will continue to rise in the coming years.[45] Alongside its positive aspects (greater transparency and better access to information for all market parties), it is also accompanied by food safety and public health risks. For instance, the NVWA's IOD has been investigating slimming products that contain the prohibited medicinal product sibutramine without that being stated on the label, which are offered for sale on social media. The substance can have serious side effects, including heart complaints. The NVWA issued a public health warning in October 2016 and March 2017. Its knowledge of what is happening on the internet (including the dark web and the deep web) is far from complete at present, making it difficult to supervise food safety.

The NVWA has established that the business community in general is inadequately equipped to identify and report food fraud effectively. The same is also apparent from an online tool of a consultancy firm that businesses can use to identify the level of risk of fraud to which they are exposed. Of the 1,400 businesses to have used this tool, it turns out that 43% take no measures or take inadequate measures to prevent fraud.[46] A survey conducted by the Netherlands Network for Quality Management (NNK) also reveals that one in four quality assurance managers at food businesses is occasionally asked to act unethically.[47] There is room for improvement in the business community's vigilance and willingness to report when it comes to food fraud.

4.4 Indications of fraud and the approach taken to tackle it

Every year, the IOD generates about 200 indications of fraud in the domains covered by the NVWA, some of which involve food fraud. The indications are discussed with experts from the supervision divisions and/or the NVWA's Office for Risk Assessment & Research (BuRO). The food safety and public health risks are assessed during those discussions. In the event of an acute risk, the IOD will take direct action to deal with the indication, where applicable in collaboration with the NVWA supervisory division responsible. Other indications are dealt with using the standard supervisory procedure.

The meat sector

The NVWA's IOD has long had good access to information in the meat sector. This results in, among other things, a large number of indications pointing to meat fraud. Roughly one half of all indications concerning food fraud generated by the IOD each year relate to meat fraud. The most common form of fraud used in the meat sector involves changing the identity (reclassifying) of meat, including reclassifying the animal species, method of production, destination or origin. This form of fraud results in an unidentifiable product and means that the proper controls cannot be carried out. For instance, the IOD has found in several criminal investigations that horses that are unfit for human consumption owing to the undesirable medications administered to them can nevertheless find their way into the human food chain (as beef). The meat cannot be subjected to the proper controls because the fraudster has given the meat a different, false identity.

It is therefore not clear whether the meat is safe for human consumption, and attempts to trace it are frustrated.

The Animals Act (Wet dieren) is applicable to fraud involving fresh meat. This form of fraud is an offence carrying a maximum penalty of six years. However, when a case involves processed meat products, the Animals Act provides for a maximum penalty of six months.

This legislation makes investigations more difficult. In principle, the NVWA's IOD may use its powers, such as carrying out telephone taps or surveillance operations, only where the offence concerned carries a minimum term of imprisonment of four years. The use of those powers is essential if investigators are to be able to show that fraud has taken place as regards the safety

[45] https://www.rabobankcijfersentrends.nl/index.cfm?action=branche&branche=Groothandel_in_voedingsmiddelen

[46] Source: the VMT event held on 30 November 2017; the presentations are publicly available: http://www.vmt.nl/Foodsafetyevent/presentative

[47] Source: the VMT event held on 30 November 2017; the presentations are publicly available: http://www.vmt.nl/Foodsafetyevent/presentatie

and authenticity of the food. Taking action and carrying out supervision under administrative law do not always prove adequate means of bringing the truth to light.

Animal by-products

Substantial amounts can be earned by committing fraud with animal by-products. The IOD finds that fraudsters aim to keep animal by-products as high in the value-chain as possible (food-feed-energy applications (e.g. anaerobic digestion)-waste). That way, they can earn more or make savings on costs. The costs attached to a reduction in value are the main reason behind this. Within the food-feed-energy applications-waste chain, a batch will decrease in value when it ends up lower down in the chain, and will even cost money if it becomes "waste". A great deal of money can be saved and/or earned by recycling such batches illegally. The NVWA's IOD has observed this modus operandi in several investigations.

Animal feed

Fraud involving animal feed can have major food safety consequences. Animal feed is often made from various raw materials. As is the case with animal by-products, there is a high risk with animal feed of fraudsters not downgrading the value of lower quality raw materials because of the associated costs. As a consequence, batches are recycled, for example under a different name (reclassification), or mixed with a "clean" batch (upgrading). This means it is possible for detergents and disinfectants, mould, Salmonella, dioxins, pesticides, antibiotics and PCBs (polychlorinated biphenyls), mycotoxins or other toxic substances to ultimately find their way into the human food chain.

The IOD has completed an investigation into a company suspected of having sold animal feed containing a prohibited antibiotic and of having upgraded waste to a raw material for animal feed. The prohibited antibiotic was found in several thousand calves that had eaten the feed. The calves were killed in a slaughterhouse and the meat was subsequently destroyed, thus preventing meat containing that carcinogenic substance from entering the human food chain and from being eaten by consumers. The suspected business was registered with the NVWA as an animal feed trader. The business was also registered with the National and International Road Transport Organisation (NIWO) as a firm that transports, collects and trades in industrial waste and hazardous waste, and acts as an intermediary for those services. Administrative controls and criminal investigations show that the opportunities to commit fraud are greater for businesses that are registered twice.

The fishing sector

Based on indications prompting investigations and information obtained from monitoring, the NVWA is scrutinising the fishing sector, looking for, among other things, the following forms of fraud: reclassification, upgrading and keeping quota fish off the books. It turns out that the financial gain is relatively great and the fraud comparatively simple to carry out. Fish is sold outside the normal channels, so it is not possible to carry out any supervision and checks. This creates a food safety risk. The IOD has conducted an investigation into the catching and selling of Chinese mitten crabs that had been illegally caught in what are known as "waters contaminated with dioxins". Fishing for Chinese mitten crabs is prohibited in such areas. The consumption of Chinese mitten crabs contaminated with dioxins can endanger public health.

The egg chain

Fraud manifests itself in the egg chain in a variety of ways. Examples of cases investigated by the IOD include fraud involving the classification of eggs (reclassified as barn or free-range eggs), fraud involving the BBD (best before date) and overcrowding at laying hen establishments. Non-authorised substances in biocides for production animals can endanger public health if they find their way into eggs.

The dairy chain

There is a limited number of fraud investigations and indications concerning the dairy industry. In terms of turnover, the dairy industry is one of the biggest sectors in the Dutch food industry. In addition, according to the Wageningen University and Research Centre's (WUR) RIKILT, milk and milk products are among the most vulnerable products when it comes to food fraud from a global perspective. The IOD has not specifically targeted fraud and illegal activities in the dairy supply chain in recent years, so the insight into possible fraud is limited.

Plant-based products

In recent years, the IOD has received several indications about, and conducted investigations into, fraud involving plant-based products. The fraud committed in this domain ranges from selling vegetables cultivated conventionally as organic vegetables to reclassifying or upgrading entire bulk consignments. This creates indirect and also real food safety risks. This applies primarily to bulk consignments where the aim of the fraud is to secure as high a place as possible in the value chain. After all, traders will always gain from selling a consignment at as high a price as possible. Such fraud makes it possible for harmful substances such as mould, Salmonella, dioxins, pesticides or other toxic substances to ultimately find their way into the human food chain.

In 2016, together with the NVWA's Consumer & Safety division then in existence, the IOD investigated a case of fraud involving bulk goods such as seeds, cereals and maize. That investigation revealed, among other things, that a business had been falsifying certificates, enabling consignments contaminated with *Salmonella* to be placed on the market. The NVWA issued a safety warning. The investigation also revealed that it was no longer possible to trace batches administratively, that samples taken from batches were contaminated with *Salmonella* and that laboratory results had been falsified.

Food supplements

Several supervisory investigations show that products containing high-risk or illegal ingredients that are not mentioned on the labels are being sold. Substances such as sibutramine, sildenafil and ephedrine are added to enhance the effects of the product and to retain customers. The IOD encounters this practice in, among other things, slimming products and products to treat erectile dysfunction. Substances such as these can have serious side effects.

For instance, the IOD investigated a business that had marketed a food supplement that turned out to contain a medicinal product. The packaging and the information leaflet for the product stated that it contained only plants or plant extracts. An analysis revealed that the product contained the medicinal product thiosildenafil. This is a derivative of sildenafil, the active ingredient of, among other things, the medicinal product Viagra. The NVWA Office for Risk Assessment & Research established that an innocent consumer unwittingly taking this active substance runs a substantial risk of experiencing damaging effects on their cardiovascular system.

Infant formulae

Baby milk powder has been in relatively short supply in the Netherlands in recent years. Its scarcity is the result not only of increased demand from China following the melamine scandal, but also of a fire in a factory in the Netherlands that meant a drop in the production of baby milk powder for significant period. The shortage and the great demand for it have created a black market for baby milk powder and led to criminality of varying degrees of seriousness, including shoplifting, robberies and instances where the dealer kept both the money and the product. In just one year, the police recorded nine hundred cases of shoplifting involving baby milk powder.[48] The stolen cans were offered for sale, including online. The National Police is responsible for tackling baby milk powder theft. The IOD steps in when fraud involving baby milk powder is committed, as such fraud constitutes a food safety hazard. The number of indications in this regard is limited. In late 2015 and early 2016, the IOD investigated the falsification of labels on baby milk powder. The suspects attached falsified labels on cans of baby milk powder, giving the false impression that the food was suitable for babies allergic to cow's milk. If children with a cow milk allergy drunk that milk, they could have had a severe allergic reaction.

[48] http://www.nrc.nl/handelsblad/2015/09/29/gezocht-nutrilon-bel-06-het-echte-witte-goud-h-1542262

Facilitators

The IOD is investing in tackling facilitators. It comes across them in a variety of business sectors, such as printing companies, cold and frozen stores, accountants, veterinary surgeons and laboratories. For example, a printing company played a crucial role in the baby milk powder fraud by printing the falsified labels. The IOD has also observed printing companies playing a facilitating role in other investigations. It has since held discussions with the sector association for printing companies, the Royal Dutch Association of Printing and Allied Industries (KVGO), to raise awareness of fraud within the sector. Knowingly cooperating with illegal practices undermines safety and quantity systems, which is why tackling facilitators is a priority for the NVWA's IOD and other investigative services.

Findings of the Fraud Expertise Unit (FEK)

Alongside the often major and complex IOD investigations, the NVWA has also been dealing with what are known as FEK cases since April 2016. Within the FEK, supervisory and investigation officers work together on fraud cases of a manageable magnitude that can be addressed quickly. In 2016, FEK officers carried out twelve investigations in several of the domains covered by the NVWA, including manure fraud, trading in illegal plant protection products and fraud involving the certification of fairground attractions. Food fraud was the subject of seven investigations. Examples include the reclassification of inexpensive Irish oysters as expensive French oysters, the reclassification of raw materials for animal feed as raw materials for foodstuffs, and the addition of the prohibited substance sulphite to meat over many years. In the "sulphite case", 30,000 kilograms of meat were seized and products were recalled from 49 buyers in 6 European countries, including the Netherlands. The FEK was continued in 2017 and the NVWA has taken on dozens of new cases.

4.5 Conclusion

The NVWA has called attention to the fact that external developments are increasing the opportunities to commit food fraud, its profitability and the likelihood of its being committed. The NVWA's findings in the area of food fraud also bear this out.

The increased possibility of food fraud being committed not only represents a direct or indirect food safety risk, but also adversely affects the traceability of the products and undermines consumer confidence in food and the system.

Enhancing the possibilities for detecting and tackling fraud is necessary if we are to combat present and future food fraud effectively. Making the maximum penalty for fraud involving fresh meat and fraud involving processed meat products consistent would be a desirable move. Moreover, the penalty must be of a level such that the IOD is allowed to use the necessary investigative methods.

5 Future developments

5.1 Introduction

Following a brief description of the NVWA's position as regards knowledge and access to information, this chapter will deal with new developments that might have an impact on food safety and, therefore, its supervision and its communications in that regard.

5.2 The NVWA's position as regards knowledge and access to information

The NVWA's aim is to anticipate trends and developments in society in good time, as these could have major consequences for food safety and its supervision.

The NVWA has good national and international knowledge networks and sources of knowledge. It is important to anchor the knowledge gained from those networks and sources within the organisation and add to it where necessary.

Supervision and enforcement require constant adjustments to changing circumstances. The business community, ministries and supervisory authorities must identify every new threat to food safety as quickly as possible, and in the process weigh the risks against each other. The NVWA also carries out projects with the purpose or secondary purpose to improve knowledge concerning new threats within the organisation.

The overall area monitored by the NVWA has been subdivided on the basis of risk profiles and policy-related or supervision-related objectives. Knowledge, information, expertise and experience are pooled within the organisation using various classification principles, including classification by process, domain, chain or sector, as well as geographically. Since the reorganisation of July 2017, classification by process has been the dominant classification principle.

5.3 Developments in relation to food safety

The foodstuffs enjoyed by Dutch consumers come from a complex global network of flows of raw materials and semi-finished products that are processed and combined to create foodstuffs. Global developments affect the Netherlands too.[49] Below is a brief description of global developments, the potential food safety risks and the significance of those developments for the NVWA's supervisory activities.

Climate change

Worldwide climate change has the capacity to influence the quality of raw materials, semi-finished products and end products. For example, extreme drought or extremely heavy rainfall can often give rise to the growth of new mould species that produce toxic substances, so-called mycotoxins, and threaten food safety. Higher temperatures and humidity levels require adjustments to crop production methods and storage conditions of animal feed and foodstuffs, as well as the raw materials used to make them.

The intensity of extreme weather conditions throughout the world and the related migration of people is causing changes in the flows of raw materials. Raw materials are coming from different countries of origin. Following failed harvests, exporting countries can close their borders and use the harvest in their own country only. Exporting countries can maintain strategic stocks, buy agricultural land elsewhere or enter into bilateral long-term contracts. As a result, there is a steady increase in imports into Europe from new areas and a greater variety in the areas from which goods are imported.

The impact on food safety of the migration of people and the possible related introduction of "old" crops or changing patterns of consumption in "new" places in the world is still largely unknown.

Nutrition and food

Recent decades have seen a number of developments in the area of nutrition and food. Agriculture and fishing have been industrialised and grown in scale. Food production chains are longer and have become increasingly international in scope. Thanks to technological changes (containers, air transport and cold chain technologies), supermarkets offer a broad range of food all year round. The Internet and digitisation make different forms of trading and dynamics possible.

The risks presented by pathogens that cause illness in both animals and humans will increase as the production of foodstuffs of animal origin in Latin America, Asia and Africa rises. Intensive global trade means that those pathogens have the potential to result in epidemics and pandemics. The associated public health risks could be more severe owing to the risks caused by increasing resistance to antibiotics.[50]

The power relationships within the world of food production have shifted in recent decades. A small number of businesses occupy a dominant position, such as businesses controlling the production of seeds or plant protection products.

The consumption pattern of people living in the Netherlands is subject to change. The combination of greater prosperity and urbanisation has resulted in a rise in the consumption of animal-based and processed products and convenience food. In addition, increasing use is being made of "food service" meals, i.e. meals prepared outside the home (hotel and catering establishments, caterers and canteens). Further examples of popular trends in the Netherlands include "organic farmers", "local food" and "shorter food supply chains".

People's interest in the health aspects of food is increasing. The food industry and the new food supplement market, including web shops, are responding to this development, for example by offering new supplements incorporating herbs or other ingredients.

[49] Scientific Council for Government Policy (WRR), "On the way to a food policy". WRR report 93, 2014.

[50] https://zoek.officielebekendmakingen.nl/kst-32620-91.odt

As stated in the RIVM "What are we eating" report,[51] the tension between sustainable, healthy and safe food and convenience, affordability and the economy is prompting people to make choices. To be able to make the right choices, consumers need the proper information, and the foodstuffs offered must be healthy, safe and sustainable. The NVWA contributes to the safety of foodstuffs through its supervisory activities. The Netherlands Nutrition Centre plays its part by providing consumers with sound information.

Growth of the world's population

The growth of the world's population means that more food needs to be produced, including more high-protein food. The increased demand, in an absolute sense, for high-protein food and animal feed has led to research into alternative sources of protein, such as algae, seaweed, insects and new protein-rich crops. That research has been spurred on by the shift from consumption of animal-based proteins to plant-based proteins. The chemical and microbiological hazards and/or risks posed by these new sources of protein are not yet known in all cases. New frameworks and amendments to laws and regulations at European level will be required to establish how and under what conditions insects can be used as new sources of protein.

Population ageing

Older people belong to the group known as YOPIs (Young, Old, Pregnant, Immunocompromised). These are population groups for which food-borne infections present a particular risk. The ageing of the Dutch population means an increase in the number of people with less resistance to food-borne infections and with different nutritional requirements.

The circular economy

The scarcity of raw materials and a desire to produce products more sustainably means that a worldwide transition from a linear to a circular economy is presently under way. A circular system is a system that maximises the re-usability of products and raw materials and minimises value destruction. The nationwide Circular Economy programme[52] aims to realise a circular economy with social partners by 2050. One of the government's interim goals is to achieve a 50% reduction in the use of primary raw materials by 2030.

Countering food wastage to the greatest extent possible can be incompatible with food safety. Maximising the value of residual flows will require coordination among national and (pan)EU supervisory authorities, also with the objective of preventing waste from entering the food supply chain and an increase in fraud.

The hazard posed by the migration of mineral oils from packaging of recycled paper and cardboard is now a well-known example of how recycling can lead to new areas where testing is required, and potentially to new risks.

New technologies

Digitisation, robotisation, the use of big data and the application of blockchain technology will have a significant impact on supervisory activities in the future. These developments will require a higher level of attention and investments if optimum use is to be made of the opportunities they offer and to ensure that a tailor-made approach is maintained with regard to monitoring how the business community is dealing with them.

In addition to the abovementioned important developments in the area of information and communication technology (ICT), there are also many other new technologies that will have an impact on food safety and the supervision thereof. Some of those developments are outlined below.

[51] Ocké MC, Toxopeus IB, Geurts M, Mengelers MJB, Temme EHM, Hoeymans N. "Wat ligt er op ons bord? Veilig, gezond en duurzaam eten in Nederland". (What are we eating? Eating safely, healthily and sustainably in the Netherlands). RIVM report 2016-0200.

[52] https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/rapporten/2016/09/14/bijlage-1-nederland-circulair-in-2050/bijlage-1-nederland-circulair-in-2050.pdf

Foodstuff producers are using new technologies to increase productivity levels or extend the shelf life of products. New preservation technologies, such as the use of pulsating electric fields, high-pressure treatment and mild surface decontamination using cold plasma, have the potential to extend the shelf life of fruit juices and milk, for instance.

New production processes or the use of new materials or auxiliary materials will require thorough testing if the introduction of potential risks is to be prevented. New strategies to prevent and combat animal diseases could also cause new food safety risks. New production processes or the use of new materials or crops could result in new foodstuffs. Approval will be required before these novel foods can be placed on the market.

Crop improvement can lead to the use of specific plant protection products and consequently to specific food safety risks.

E-commerce

Expectations are that e-commerce will advance further still and become increasingly global. The market share of food traded online is expected to increase. Food supplements in particular are already being purchased extensively through web shops.

5.4 The reliability and clarity of information

Consumers appear to be placing increasingly less trust in what scientists and professionals have to say about food safety. Added to that is the development where bloggers, vloggers and "gurus" use social media to encourage certain groups of consumers to eat food that scientists warn against from a food safety and/or public health point of view. This trend allows room for many hypes to emerge. Examples include the increased demand for super foods and a host of different diets based on the notion that they will have a positive health effect, even though the opposite may well be the case.

When it comes to food safety, consumers' perception is at odds with scientific knowledge. For instance, many consumers think that naturally occurring substances are less hazardous than synthetic chemical substances. The contrary may prove to be the case.

Moreover, many customers distrust added substances that have been deemed safe on the basis of scientific consensus. These include, for example, certain additives that are added to food to improve its taste, texture or shelf life.

5.5 Developments in supervision and areas supervised

The NVWA carries out its supervisory activities using a knowledge-driven and risk-based approach, based on topical analyses of developments in its working area, for example in the form of market surveys, trend analyses, EFSA reports or risk analyses by the NVWA's Office for Risk Assessment & Research.

The NVWA keeps its' monitoring programme as up-to-date as possible based on knowledge of new raw material flows and the hazards that could occur in countries of origin, including new countries of origin, and on the basis of indications concerning new technologies. To that extent, the NVWA cooperates with RIKILT and the RIVM, both of which have an important role to play in identifying new food safety threats in this area.

The NVWA will be using data science to enable us to make smarter use of the opportunities data offer in the years ahead. Alongside internal data, the NVWA will also make more frequent and greater use of external data, within the legal and ethical frameworks. This will also involve collaboration with universities and scientific institutions.

5.6 Conclusion

As well as positive effects, the NVWA has also identified new food safety risks resulting from technological and social developments and developments in the living environment.

The NVWA's aim is to anticipate trends and developments in society in good time, as these could have major consequences for food safety and its supervision. Assessing those developments to establish their consequences for the NVWA's supervisory and investigative activities is an important task performed by the NVWA's Office for Risk Assessment & Research, in collaboration with the ministries, knowledge institutions, the EFSA and the European Commission.

6 Food safety in perspective

6.1 Introduction

The previous chapters have dealt in detail with the outcomes of supervision, testing and investigation so as to provide insight into food safety. Indicators such as the number of cases of illness resulting from pathogens in food can provide an insight into food safety.

Indicators[53] can be a useful tool for:

- developing policy and supervisory activities;
- setting priorities, including for policy and supervisory activities;
- measuring the extent to which policy-related or supervisory objectives have been achieved;
- describing developments over time.

This chapter contains a description of a number of specific indicators for food safety, namely:

- the effectiveness of supervision in relation to food safety-related compliance;
- consumer confidence in food safety;
- the numbers of reports and complaints about unsafe food.

Finally, a description is given of a number of examples of how other European supervisory authorities assess and chart food safety in their countries.

[53] The Oxford Dictionary of English defines an indicator as "a thing that indicates the state or level of something".

6.2 Effectiveness of supervision

The NVWA is making efforts to clearly show the effectiveness of its supervision. By means of a number of specific projects, the NVWA has obtained a clearer picture of the extent to which supervision and enforcement can contribute – or not, as the case may be – to compliance with laws and regulations. An example of one such project is described below.

The development of effective enforcement tools in accordance with the compliance risk management strategy has demonstrated the impact of a new tool on kebab businesses.[54] The new tool indicated an increase in compliance of 10% in relation to safe production. A second demonstrable impact is the 15% fall in the compliance rate at Kebab businesses where no supervision was performed. This shows that supervision and the specifics of that supervision for this target group had an impact on compliance with food safety laws and regulations.

6.3 Reports and complaints

Reports made by consumers, and also businesses, relate to aspects of food safety. The same applies to the EU RASFF (Rapid Alert System for Food and Feed) notification system, where the NVWA and our European partner organisations submit notifications whenever an unsafe or harmful foodstuff from one EU Member State has entered another.

The correlation between the number of reports and food safety is not particularly strong, among other things because of the differences in the seriousness of the reports and the varying readiness of actors report or notify the authority. That said, registering developments in terms of the number and nature of reports and monitoring them can be a useful exercise, because the resultant picture can prompt adjustments of supervisory activities.

Table 12 Reports and complaints in 2016

Indicator	Dimension or unit of measurement	
Number of reports made to the NVWA's Customer Contact Centre [55]	Number per year	3,745
Number of Rapid Alerts (food) submitted by the Netherlands	Number per year	279
Number of Rapid Alerts relevant to the Netherlands submitted by other Member States (food)	Number per year	261

[54] Shoarma aan de rol! Het effect van vernieuwend toezicht (Kebab on a spit! The impact of innovative supervision). Tijdschrift voor toezicht (Journal for supervision) (6)4, 30-48.

[55] NVWA 2015 annual report and NVWA 2016 annual report.

6.4 Consumer confidence

Consumer confidence in food safety is only a partial indicator of the actual food safety level. Nevertheless, it is important to measure consumer confidence in food safety and to monitor it over time. To this end, the NVWA developed the Consumer Monitor. On the instructions of the Minister of Agriculture, Nature and Food Quality, the Consumer Monitor, in principle, is used every two years and measures the perceived confidence in food safety of the Dutch consumer with the aid of questionnaires. The last NVWA Consumer Monitor dates back to 2015; the next one will be carried out in 2018.

Table 13 Consumer confidence

Indicator	Dimension or unit of measurement	
Consumer Monitor: "I'm worried about food safety".	Score on a scale of 1 (completely disagree) to 5 (completely agree)[56]	3.18 (2015)

The EFSA's Eurobarometer 354

In June 2010, at the request of the EFSA, research was conducted in the European Member States into the public perception of and concern about food and food-related risks.

Some of the results are set out below.

- The subject causing the greatest concern in Europe was plant protection product residues on fruit, vegetables and cereals. Of those surveyed, 19% indicated that chemical substances, pesticides and other substances were the main areas for concern. The "Total worried" percentage within this group was the lowest for the Netherlands (53%), with 72% being the average for the European Member States. The percentage in the Netherlands had increased by 12% relative to 2005.
- The majority of the respondents (61%) agreed with the statement "public authorities in the EU take into account citizens' concerns regarding food safety". The score for the Netherlands was 93%, whilst that for Italy, for example, was 54%, and that for Germany 53%.

In response to the question as to whether they are concerned about food safety, 20% of the Dutch respondents indicate that they have serious concerns. Apart from Austria, this was the lowest percentage in the European countries surveyed.

Food Safety Performance 2014 – world ranking

In 2014, the Conference Board of Canada published a report in which 17 OECD (Organisation for Economic Cooperation and Development) countries, including the Netherlands, were compared with each other on the basis of ten indicators for food safety performance from three areas: risk assessment, management and communication.[57] All countries had very high food safety standards, but Canada and Ireland performed the best. The Netherlands ended up in eighth place. The indicators chosen also concerned the use of pesticides and the risk posed by allergens, for example. The scores of the countries involved ranged from 2 to 2.6; the Netherlands scored a 2.3. Compared with other countries, the Netherlands scored relatively low on the use of pesticides.

[56] On a scale of 1 (completely disagree) to 5 (completely agree).

[57] Conference Board of Canada. Food Safety Performance 2014 World Ranking. http://www.conferenceboard.ca/e-library/abstract.aspx?did=6562

6.5 European examples

The Federal Agency for the Safety of the Food Chain (FASFC) in Belgium has developed the food safety barometer as a tool for measuring the safety of the food supply chain. The food safety barometer is limited to chemical, physical and microbiological hazards in food and consists of a set of thirty measurable indicators (food safety performance indicators, or FSIs) that together chart the food safety situation. The indicators cover every link in the food supply chain, from upstream suppliers to the consumer, and apply both to Belgian products and to imported products. Checks of products (for the presence of chemical and biological hazards) and also checks of processes (inspections and audits) are included in the set. The preventive approach (self-monitoring, reporting obligation and traceability) and food-borne outbreaks (a collective name for infections or poisoning caused by the consumption of contaminated food or water) are also included in the barometer.[58]

Since the impact of the thirty indicators on food safety varies, their relative importance was weighed by different stakeholders from the food supply chain and the FASFC's Scientific Committee. For instance, greater weight was attached to indicators concerning inspections than to indicators connected with acrylamide or *Salmonella*.[59]

Data for all thirty food safety indicators have been gathered since 2007. The barometer shows the first decline in food safety in 2016. This negative development (-2.2% relative to 2015) is mainly the result of an increase in the number of people affected by a food-borne infection and in the number of cases of listeriosis in humans reported.

A further example may be found in the annual report of the Food Safety Authority of Ireland (FSAI). The FSAI reported the following figures[60] for 2016: the number of food alerts issued; alerts concerning incorrect food allergen declarations, food businesses under the FSAI's supervision, occasions when food safety legislation was contravened, questions put, food supplements assessed in terms of safety and health claims, analysed samples, risk assessments carried out, suspected contraventions of the law and cases of food fraud investigated.

6.6 Conclusion

Dutch consumers' confidence in food safety is at a relatively high level compared with that of consumers in other EU Member States.

Like most partner authorities in Europe who deal with food safety, the NVWA is working on obtaining an ever clearer insight into food safety. Enriching our own body of knowledge, expanding investigative and analysis possibilities and utilising knowledge from other sources is essential to that end. Future Food Safety Statements will build on the information and knowledge about food safety included in this first Food Safety Statement.

[58] http://www.favv.be/wetenschappelijkcomite/barometer/voedselveiligheid/meten.asp

[59] Scientific Committee of the Federal Agency for the Safety of the Food Chain. SciCom Recommendation 11-2012 Subject: The weight factors of the indicators used in the food safety, animal health and plant health (phytosanitary situation) barometers (dossier Sci Com 2012/03). http://www.afsca.be/wetenschappelijkcomite/adviezen/2012/_documents/ADVIES11-2012_NL_DOSSIER2012-03.pdf

[60] FSAI, Ireland. Annual Report 2016, October 2017: https://www.fsai.ie/publications_annual_report2016

Appendices

Appendix 1
Abbreviations and glossary

Abbreviation or term	Description
3-MCPD	3-monochloropropanediol (3-MCPD), a process contaminant
Acrylamide	Acrylamide is a harmful substance that can be created when starchy products, such as potatoes and cereals, are heated at temperatures exceeding 100°C.
Administrative controls	An audit of the administration, including the financial administration, making use of digital aids.
Aflatoxin	Aflatoxin is a mould toxin (mycotoxin) that can occur in various products, such as nuts, cereals, rice, legumes, peanut butter, bread and beer.
ALARA principle	As Low As Reasonably Achievable
GFLR	General Food Law Regulation (Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety).
ARfD	The Acute Reference Dose (ARfD) is an estimate of the amount of a substance in food or drinking water that can be ingested within a 24-hour period without appreciable health risk.
Audit	An audit is an examination or inspection of a company or legal entity that provides an insight into the reliability of a system by assessing whether it meets the requirements and conditions.
B2B	This stands for business-to-business.
B2C	This stands for business-to-consumer.
Bacillus cereus	*Bacillus* cereus is a bacterium that can cause food poisoning. The bacterium can occur in rice or pasta dishes that have been left standing for too long and at too high a temperature.
Bacterium	This is a single-celled organism that can multiply rapidly in the correct conditions, such as temperature, pH value, availability of water (Aw value) and nutrients (examples include *Salmonella*, *Listeria*, *Campylobacter*, *Escherichia*, and *Vibrio*).
Food safety information sheets	Basic information sheets prepared by the NVWA for the Food Safety Statement.
Benzoic acid	Benzoic acid and benzoates are used as preservatives to prevent the growth of yeasts and bacteria in acidic products. They are not particularly effective in controlling mould and are ineffective in slightly acidic or neutral products (with a pH value above 5).
Processed product	This is a product that has undergone any form of processing causing its consistency to change. This involves processes such as blending, reducing, mixing or heating.
Biocide	These are substances intended to exert a controlling effect on harmful organisms.
BuRO	This stands for the NVWA's Office for Risk Assessment & Research (in Dutch: *Bureau risicobeoordeling & Onderzoek*).
Clean labelling	This is a trend among food producers to use as few substances that are perceived as artificial as possible.
Clostridium perfringens	*Clostridium perfringens* is a bacterium that can occur in meat and meat products.
COKZ	This stands for the Netherlands Controlling Authority for Milk and Milk Products (in Dutch: *Centraal Orgaan Kwaliteitsaangelegenheden Zuivel*)
Cold chain technology	The cold chain is an uninterrupted system of refrigeration during the transport of food from the producer to the end user.
DALY	The overall disease burden is expressed in Disability Adjusted Life Years (DALY) and is made up of the number of years of potential life lost (due to premature death) and the number of years lived with health problems (with a disease, for example), weighted to account for their severity (years lived with disability).

Animal by-products	These are materials of animal origin that, for one reason or another, are not suitable or intended for human consumption. They can be found on livestock farms (animal carcasses), in slaughterhouses (slaughter by-products), in food production businesses and also in supermarkets, restaurants and households.
E-commerce	This refers to the online trade in products.
Ephedrine	This is an extract of the plant Ephedra, a powerful stimulant of the sympathetic nervous system.
EFSA	This stands for the European Food Safety Authority
E-number	E numbers are EU-approved food additives that may be added to food to improve product characteristics. Examples include colourants, flavour enhancers and preservatives.
ESBL	This stands for Extended Spectrum Beta Lactamase, an enzyme that confers resistance (resistance to an important group of antibiotics, such as penicillins and cephalosporins).
EU	The European Union
EZK	This stands for the Dutch Ministry of Economic Affairs and Climate Policy (in Dutch: *Economische Zaken en Klimaat*).
Facilitators	These are people or organisations assisting with the preparation, carrying out or concealment of illegal activities.
Pharmaceutically active substances	Pharmaceutically active substances influence the physiological functions (e.g. metabolism or blood pressure) of humans and animals. For instance, they can result in high blood pressure or increased cardiac rhythm.
FEK	This stands for the NVWA's Fraud Expertise Unit (in Dutch: *Fraude Expertise Knooppunt*).
FIOD	This stands for the Fiscal Intelligence and Investigation Service (in Dutch: *Fiscale Inlichtingen- en Opsporingsdienst*).
FLEP	This stands for Food Law Enforcement Practitioners.
Fraud	Fraud is deliberate deception intended to result in personal gain at the expense of others.
Hazard	This refers to a biological, chemical or physical agent in, or condition of, food or feed with the potential to cause an adverse health effect.
Health claim	This is a claim that alleges, creates the impression or implies that there is a relationship between a foodstuff category, a foodstuff or a component thereof and health.
Good agricultural practices	Good agricultural practices is a collection of principles, rules and regulations, applicable to the production, processing and transport of food, aimed at improving public health, the environment and the working conditions under which the food is produced.
HACCP	This stands for Hazard Analysis and Critical Control Points. This is a risk-based inventory system that is mandatory for the food-processing industry. With this system, potential hazards are identified in each phase of production, and management measures are established to prevent food from becoming unsafe.
Enforcement	Enforcement is aimed at "enforcing compliance" and covers the entire range of activities whose purpose is to ensure compliance with the requirements set for a business or an action.
Histamine	This is a degradation product of the amino acid histidine, which can lead to a hypersensitivity response.
Shelf life	This refers to the period within which the food product retains its specific characteristics, relating to safety and quality, provided it is stored correctly. The best-before-date indicates the date until which that period applies.
HUF assessment	This stands for Enforceability, Practicability and Fraud Resistance assessment (in Dutch: *Haalbaarheid, Uitvoerbaarheid en Fraudebestendigheid-toets*).
Hygiene code	The hygiene code covers the sectoral food safety rules approved by the minister that can be used instead of, or combined with, HACCP. They rules are intended for use within a sector (e.g. the hotel and catering industry).
IGJ	This stands for the Inspectorate for Health and Youth Care (in Dutch: *Inspectie Gezondheidszorg en Jeugd*).
ILT	This stands for the Human Environment and Transport Inspectorate (in Dutch: *Inspectie Leefomgeving en Transport*).

SZW Inspectorate	This stands for the Social Affairs and Employment Inspectorate (in Dutch: *Inspectie Sociale Zaken en Werkgelegenheid*).
Inspection Council	The Inspection Council consists of inspectors general and heads of the collaborating state inspectorates.
Intervention	This refers to every tool used by the NVWA to promote compliance with statutory provisions.
IOD	This stands for the NVWA's Intelligence and Investigation Service (in Dutch: *Inlichtingen- en Opsporingsdienst*).
IRA	This stands for Integrated Risk Analysis, which involves the translation of a chain's risk assessments, current state of fraud and compliance into an integrated analysis of risks relating to food safety, animal welfare, animal health, product safety and plant health within that chain.
KPI	This stands for key performance indicator, which enables the result of activities, including supervisory activities, to be measured. Examples include the enforcement rate and the compliance rate.
Herbal preparation	Herbal preparations are powders, drinks or tablets containing herbs that are known to have a particular effect, such as an appetite-suppressing, calming or soporific effect.
Cross-contamination	This refers to the transfer of a contaminant, or part of a contaminant, to another surface.
Farm animal	A farm animal is a domesticated animal that is exploited economically in agriculture, usually for food production.
Listeria monocytogenes	*Listeria monocytogenes* is a bacterium that can cause a food-borne infection. The likelihood of *Listeria contamination* is small, but the consequences can be serious, particularly for pregnant women.
Listeriosis	This is an infection caused by contamination with Listeria.
LNV	This stands for the (Ministry of) Agriculture, Nature and Food Quality (in Dutch: *Landbouw, Natuur en Voedselkwaliteit*).
Report	This refers to a relevant indicator concerning abuses relating to food, goods, animals and plants and services that have been produced or arisen within society.
ML	This stands for Maximum Limit.
Monitoring	This involves systematically following developments in a sector's compliance or quality level without having to follow up with an opinion or intervention.
MRL	This stands for Maximum Residue Limit, the legally permitted maximum residual level (residue) of a substance in or on foodstuffs.
Mycotoxins	These are mould toxins, the metabolic products of moulds, which occur naturally throughout the world on cereals, nuts and other crops. The mould can produce mould toxins on the plant, including after harvest.
Compliance	This means adhering to standards or quality requirements set.
NCAE	This stands for the Dutch Controlling Authority for Eggs (in Dutch: *Nederlandse Controle Autoriteit Eieren*).
NGOs	This stands for non-governmental organisations.
Nitrite	Nitrite is a preservative for meat products.
Norovirus	This is an extremely contagious virus that can cause a food-borne infection. The Norovirus can occur in, among other things, raw molluscs and crustaceans and on raw vegetables and fruit.
NVWA	This stands for the Netherlands Food and Consumer Product Safety Authority (in Dutch: *Nederlandse Voedsel- en Warenautoriteit*).
Ochratoxin A	This is a mould toxin that can occur in various products, such as cereals, coffee, nuts and dried fruit.
Unsafe food	This refers to food that is harmful to health or unfit for consumption.
Investigation	This refers to investigating criminal offences under the authority of the public prosecutor with the purpose of taking decisions pertaining to criminal procedure.
PAH	This stands for Polycyclic aromatic hydrocarbon.
Parasite	A parasite is a single-celled or multi-celled organism that spends its life cycle, or part of it, inside another organism (e.g. *Toxoplasma*, *Trichinella* and *Giardia*).
Pathogen	Pathogens are microorganisms that can cause disease (such as *Salmonella*, *Listeria* and *Campylobacter*).
pH	This is a measure of the acidity level – the lower the pH value, the more acidic the substance.
PHC	This stands for process hygiene criterion.
Plant toxins	These are toxic substances of plant origin.

Primary production	These are businesses involved in the first stage of a production chain, such as arable farmers, livestock farmers and market gardeners.
RASFF	This stands for Rapid Alert System for Food and Feed, a European network allowing rapid alerts concerning harmful food and feed to be transmitted between the Member States.
Reservoir	This refers to a place within the chain where a pathogen can remain for a fairly long period, and can even multiply (for zoonoses in the context of food safety, farm animals will often be the reservoir).
RIKILT	RIKILT is part of Wageningen University & Research. It is a laboratory that carries out independent research into food safety and reliability.
Risk	Risk is a function of the probability of an adverse health effect and the severity of that effect, consequential to a hazard.
Risk analysis	This is a process consisting of three interconnected components: risk assessment, risk management and risk communication.
Risk assessment	This is a scientifically-based process consisting of four steps: hazard identification, hazard characterisation, exposure assessment and risk characterisation, which results in a finding on the risk to public health.
RIVM	This stands for the National Institute for Public Health and the Environment (in Dutch: *Rijksinstituut voor Volksgezondheid en Milieu*).
Salmonella	*Salmonella* is a pathogenic bacterium. Salmonella can occur in raw animal products, such as meat, fish and eggs, and on raw vegetables, sprouts and fruit.
Sibutramine	This is a slimming agent that is no longer authorised for use in the EU.
STEC	This stands for Shiga toxin-producing *Escherichia coli*, also known as VTEC.
System	This refers to policy, laws and regulations, supervision and enforcement, put in place to guarantee food safety.
The Ministry of Health, Welfare and Sport's 2020 Strategic Knowledge Agenda	This knowledge agenda provides an overview of the key trends and objectives in the area of public health, care and support and indicates which associated topics the Ministry of Health, Welfare and Sport plans to develop in the medium to long term.
Sudan dye	This refers to artificial dyes used in confectionery, snacks, soft drinks and some alcoholic drinks.
Sulphite	This is a preservative that can lead to a hypersensitivity response.
Super food	The term super foods is not legally defined and may be used by anyone. It is usually used to refer to products allegedly containing a high percentage of vitamins.
Supervision	This involves gathering information with regard to whether an action or business meets the requirements imposed on it, consequently forming an opinion and intervening where necessary.
Adapted	Adapted supervision may differ from standard supervision because a business is participating in a private quality assurance scheme in which the NVWA has confidence.
Supervision, risk-focused	Risk-focused supervision is prioritised based on the expected food safety risks in supply chains, target groups and businesses and is aimed specifically at reducing those risks.
Supervision, systematic	System supervision focuses on the risk posed by a specific production process.
Toxoplasma gondii	The *Toxoplasma gondii* parasite can cause the disease Toxoplasmosis. *Toxoplasma gondii* can occur in raw meat.
Traceability	This relates to the possibility of tracing and following a food, feed, food-producing animal or substance intended to be or expected to be incorporated into a food or feed through all stages of production, processing and distribution.
Trichinella	*Trichinella spiralis* is a parasite that can occur in raw meat, in particular raw meat from animals living in the wild, such as wild boar.
Bivalves	This refers to bivalve molluscs, such as mussels and oysters.
Virus	A virus is a pathogenic organism that can multiply only by making use of the host's reproductive machinery.
Meat preparation	A meat preparation consists of fresh meat with ingredients added to it.
Meat product	Meat products are preserved during the production process, by heating or fermentation for example.
Food for specific target groups	This includes baby food, infant formulae, follow-on formulae, food for medical purposes and food presented as a total diet replacement for weight control.

Food supplement	These are foodstuffs whose purpose is to supplement the normal diet, consisting of concentrated sources of one or more nutrients or other substances with a nutritional or physiological effect, marketed in dose form, such as pills, tablets or drop-dispensing bottles.
Food-borne infection	This refers to instances where a consumer falls ill after eating food containing a microbiological contaminant. It will usually be a few days after consumption before the symptoms of an infection make themselves known, often in the form of stomach cramps and diarrhoea. Certain categories of food-borne infections can also lead to more serious symptoms and even death.
Food safety	Food safety is a term used to indicate the safety or otherwise of food. Safe food means that the product can be consumed without the person consuming it falling ill in the short or long term.
Food poisoning	In the case of bacterial food poisoning, the symptoms are caused not by the bacterium itself, but by the bacteria-produced toxins. They can remain in food even after the bacteria themselves have been killed (through cooking, for example). Cases where a consumer falls ill after eating food containing a chemical hazard are also defined as food poisoning. This can give rise to acute symptoms (e.g. vomiting), but harmful effects, such as the development of cancer, will not usually occur until after a fairly lengthy period.
VVC	This stands for Food Safety Criterion (in Dutch: *Voedselveiligheidscriterium*).
VWS	This stands for (the Ministry of) Health, Welfare and Sport (in Dutch: *Volksgezondheid, Welzijn en Sport*).
YOPI	This stands for Young, Old, Pregnant, Immunocompromised and refers to groups of consumers who are more susceptible to certain pathogens or whose symptoms can be more severe.
Zoonosis	This is a disease that can be passed on from animals to humans.
Heavy metals	This is the collective name for metals such as cadmium, mercury, arsenic and tin. They can make their way into the body through food. An excess of heavy metals can be harmful to health.

Appendix 2
Results of the systematic risk-based supervision at the level of production chains and domains

1 Explanation of instances of non-compliance at the level of production chains

This appendix describes the NVWA's findings based on risk-based system supervision. The fish, dairy and egg chains are discussed, and the nature of the most common instances of non-compliance is indicated. The gravity of the instances of non-compliance detected ranges from minor to serious. A small number of the instances of non-compliance have been classified as serious.

1.1 *Findings in relation to the fish chain*

The fish chain is made up of fishing businesses (in inland and coastal waters, with various categories of vessels), aquaculture businesses, fish auctions, fish-processing establishments, transporters, storage facilities, traders and importers. Fish and fish products are a vulnerable product group. Fish products nearly always feature high in the lists of RASFF notifications and of non-compliances detected.

The fishing industry has the unique option of closing production areas whenever contamination occurs. In principle, this is an effective measure for countering food safety risks. Enforcement requires additional efforts on the part of the NVWA.

Table 15 Findings relating to food safety within the fish chain in 2015 and 2016

	2015	2016
Number of businesses inspected (fish auctions, cold and frozen stores, dispatch centres, processing businesses, farms, keepers)	411	616
Number of vessels	202	221
Number of non-compliant businesses	291	225
Percentage of non-compliant businesses relative to inspected businesses	54%	42%

Shortcomings in respect of compliance with food safety rules were identified for a substantial number of fishing and aquaculture businesses. In 2015 and 2016, this concerned slightly more and slightly less, respectively, than half of the inspected businesses.

The presence and growth of Listeria monocytogenes in smoked fish during its shelf life continues to require attention.

1.2 *Findings in relation to the dairy chain*

Within the dairy chain, supervision starts at primary production (the farms) and continues up to and including the storage locations for dairy products. Recipients of farm milk, factory processors of dairy products, subsequent processors, small-scale dairy producers, farm dairy producers and storage locations belong to this business group.

The sector pays close attention to the production of safe dairy products in the Netherlands. Products made from pasteurised milk do not give rise to safety concerns.

The likelihood of raw milk and products based on raw milk being contaminated with pathogens exceeds the risk level generally accepted by society. This is borne out by the number of outbreaks and the number of RASFF notifications about such products. Partly in view of the social movement in support of the further promotion and consumption of raw milk, supervision will focus to an increasing extent on the production of (artisanal) raw milk products.

Table 16 Findings relating to food safety within the dairy chain in 2015 and 2016

	2015			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**18,988**	**903**	**125**	**14%**

	2016			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**18,603**	**927**	**163**	**18%**

The results show that roughly one in six businesses in the dairy chain did not meet the HACCP and basic requirements. The requirements that were not met mainly related to the structural condition and hygiene, the acceptance of raw materials, meeting microbiological criteria and pest control, mainly at storage locations.

1.3 *Findings in relation to the egg chain*

This chain consists of, among other things, primary businesses, packing stations, importers and traders. Egg tracing requires a greater level of attention. Gaps in the tracing process can make it impossible to take adequate action when incidents occur. In 2016, the NVWA received indications of unstamped eggs and commercial documents that could not be linked to physical batches.

The percentage of flocks of laying hens infected with *Salmonella enteritidis* and *typhimurium* has fallen to below 2% (EU target). This makes the *Salmonella* food safety programme one of the most successful programmes within the EU. Owing to the public health risks, it is important to remain on the lookout for these pathogens. The public health risk is increased because eggs for consumption are imported from other EU countries where the percentage of contaminated flocks of laying hens is markedly higher than in the Netherlands. The approach to combating *Salmonella* would be even more successful if contaminated flocks were detected faster. At present, sampling, testing and passing on information whenever *Salmonella* is found takes a relatively long time. It has emerged that adequate measures to prevent cross-contamination of eggs from non-contaminated flocks following the detection of *Salmonella* are not always taken.

Eggs produced by free-range hens and organic hens are gaining an ever-increasing market share. Hens kept this way can ingest dioxins when foraging on the ground. Although this will constitute a breach of the statutory health standard in occasional cases only, it remains an area of concern, in part because of the increase in the number of free-range hens.

Table 17 Findings relating to food safety within the egg chain in 2015 and 2016

	2015			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**1,107**	**436**	**23**	**5%**

	2016			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**1,103**	**460**	**25**	**5%**

The results show that roughly one in twenty businesses in the egg chain did not comply with one or more HACCP and basic requirement. The requirements that were not met mainly related to architectural state and hygiene, the acceptance of raw materials, combating *Salmonella* and implementing the action plan to combat it, as well as vermin control.

2 Explanation of instances of non-compliance at the level of domains

This appendix describes the NVWA's findings, based on its risk-focused system supervision, for each business group, and indicates the nature of the most common instances of non-compliance.

2.1 *Findings for food business operators carrying out activities involving foodstuffs of animal origin*

This domain comprises producers, importers, traders and storage facility keepers whose business involves meat and/or game.

Table 18 Findings in respect of businesses carrying out activities involving foodstuffs of animal origin in 2015 and 2016

	2015			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**803**	**614**	**251**	**41%**

	2016			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**819**	**632**	**271**	**43%**

The results show that nearly one in two businesses did not meet the HACCP or basic requirements. The requirements that were not met mainly related to the verification of processes in the form of sample testing and hygiene at the business, including pest control.

2.2 *Findings in respect of businesses carrying out activities involving foodstuffs of plant origin*

This domain comprises producers, importers, traders and storage facility keepers whose business involves, among other things, vegetables, fruit, nuts, seeds, cereals, flour and coffee.

Table 19 Findings in respect of businesses carrying out activities involving foodstuffs of plant origin in 2015 and 2016

	2015			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**1,228**	**455**	**129**	**28%**

	2016			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**1,251**	**435**	**149**	**34%**

The results show that, on average, one in three businesses did not meet the HACCP or basic requirements. The requirements that were not met mainly related to the verification of processes in the form of sample testing and hygiene at the business, including pest control.

2.3 *Findings in respect of businesses carrying out activities involving compound foodstuffs*

This domain comprises producers, importers, traders, storage facility keepers and office address holders whose business involves compound foodstuffs.

Table 20 Findings in respect of businesses carrying out activities involving compound foodstuffs in 2015 and 2016

	2015			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**5,055**	**1,435**	**459**	**32%**

	2016			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**5,168**	**1,455**	**443**	**30%**

The results show that nearly one in three businesses did not meet the HACCP or basic requirements.

Table 21 Findings in respect of businesses carrying out activities involving compound foodstuffs in 2015 and 2016; broken down by different product groups

	2015/2016			
	Number of businesses known to the NVWA	**Number of inspected businesses**	**Number of non-compliant businesses**	**Non-compliant businesses relative to inspected businesses**
Bread and pastries	369/366	215/197	78/66	36%/34%
Drinks	622/653	174/148	49/19	28%/13%
Convenience foods (snacks)	209/221	123/138	55/71	45%/51%
Sweets	150/157	64/66	17/11	27%/17%
Spices	42/43	22/19	9/4	41%/21%
Raw materials/auxiliary materials	203/207	61/77	15/17	25%/22%
Soup/sauce	31/34	19/23	6/12	32%/52%
Oil/fat	27/25	5/8	1/3	20%/38%
Other**	1,285/1,338	474/515	163/175	34%/34%
Transport/storage	978/991	125/134	17/31	14%/23%

** among others, distribution centres, importers and wholesalers of all kinds of foodstuff

The results show that, of all business groups within the compound products' industry, businesses involved in the convenience foods (snacks) and soup and sauce sectors have the lowest compliance rate for the HACCP or basic requirements.

2.4 Findings in respect of businesses carrying out activities involving food for specific target groups

This domain comprises producers of baby foods, infant formulae and follow-on formulae, food for medical purposes and food presented as a total diet replacement for weight control.

Table 22 Findings in respect of producers of food for specific target groups in 2015 and 2016

	2015			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**9**	**9**	**1**	**11%**

	2016			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**11**	**11**	**3**	**27%**

The results show that there are businesses even within this small group of businesses that do not meet the HACCP or basic requirements. However, this group is too small to allow any further pronouncements to be made with regard to it.

2.5 *Findings in respect of businesses carrying out activities involving food supplements and herbal preparations*

This domain comprises producers, importers and traders whose business involves food supplements and herbal preparations.

Table 23 Findings in respect of businesses carrying out activities involving food supplements and herbal preparations in 2015 and 2016

	2015			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**7,307**	**647**	**208**	**32%**

	2016			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**7,095**	**580**	**237**	**41%**

The results show that slightly more than one in three businesses did not meet the HACCP or basic requirements. The requirements that were not met mainly related to the correct use of the food safety system and its safeguarding, with an emphasis on hazard identification, as well as the use of unauthorised nutritional claims.

2.6 *Findings in respect of animal feed establishments*

This domain comprises approved and registered production establishments (including 800 food businesses), transporters (road transport and inland shipping), traders, approved animal protein establishments, storage and trans-shipment establishments, and third country representatives (trade). Animal feed plays an important role in the production of safe food of animal origin, such as meat, milk and eggs, as harmful substances can enter foodstuffs through the animals.

Table 24 Findings in respect of animal feed establishments in 2015 and 2016

	2015			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**8,746**	**768**	**114**	**15%**

	2016			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**8,746**	**1,580**	**251**	**16%**

The results show that slightly more than one in ten animal feed establishments did not meet the HACCP requirements. The requirements that were not met mainly related to inadequate integration of a quality-based approach within the management, traceability, cross-contamination or carry-over, cleaning and disinfecting, and feed dosages.

2.7 *Findings in respect of businesses carrying out activities involving animal by-products*

Businesses carrying out activities involving animal by-products comprise businesses engaged in primary production and holdings of origin (red meat, white meat, game, food products, hotel and catering establishments, retailers). Businesses focusing on storage, incineration, processing, biogas, composting, handling and derived products, collection centres, transport companies, commercial companies and feed business operators also fall within this domain.

The purpose of the legislation in this domain is to keep unsafe animal by-products out of the food supply chain, both directly and indirectly (through animal feed or manures). The risks of animal by-products being incorrectly used or allocated, and the hazards inherent in that, are greatest in holdings of origin that place the animal by-products on the market themselves, such as butchers, and in businesses handling animal by-products further down the chain (collecting, selling and transporting them). Those businesses do not always comply properly with the requirements for identification, documentation and traceability, thus increasing the risk of incorrect use or incorrect allocation.

The channelling and traceability of animal by-products in different chains and links in the chain requires a higher level of attention. This will provide an insight into the flows of animal by-products from one link in specific chains to another and will expose unknown businesses.

Table 25 Findings in respect of businesses carrying out activities involving animal by-products in 2015 and 2016

	2015			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**90,216**	**2,366**	**526**	**22%**

	2016			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**90,513**	**2,771**	**415**	**15%**

The results show that nearly one in five to six businesses did not meet the HACCP or basic requirements. In 2015 and 2016, the supervision of this business group focused on traceability. Compliance with the trading conditions (identification, documentation, record-keeping and traceability) was 81% in 2015 and 78% in 2016.

2.8 *Findings in respect of hotel and catering establishments, artisanal businesses, healthcare institutions and retailers*

This domain comprises business to consumer market (retailers, including formula businesses, and artisanal businesses), goes out to eat (hotel and catering establishments) and is provided with food (institutions).

Table 26 Findings in respect of hotel and catering establishments, artisanal businesses, healthcare institutions and retailers in 2015 and 2016

	2015			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**105,500**	**12,923**	**6,080**	**47%**

	2016			
	Businesses known to the NVWA	Inspected businesses	Non-compliant businesses	Non-compliant businesses relative to inspected businesses
Number, percentage	**116,500**	**14,960**	**8,174**	**55%**

The results show that roughly one half or more of the businesses in this largest business group did not meet the HACCP or basic requirements. The requirements that were not met mainly related to hygiene, both of the equipment and of the spaces, temperature control in the closed cold chain and during storage and presentation, and safeguards to prevent the sale of non-chilled products and re-chilling of products that had previously been heated.

Published by:

The Netherlands Food and Consumer
Product Safety Authority
P.O. Box 43006
3540 AA Utrecht
T (088) 223 33 33
F (088) 223 33 34

info@nvwa.nl
www.nvwa.nl

June 2018