



Federal Ministry
of Food
and Agriculture

Understanding food safety

Facts and background



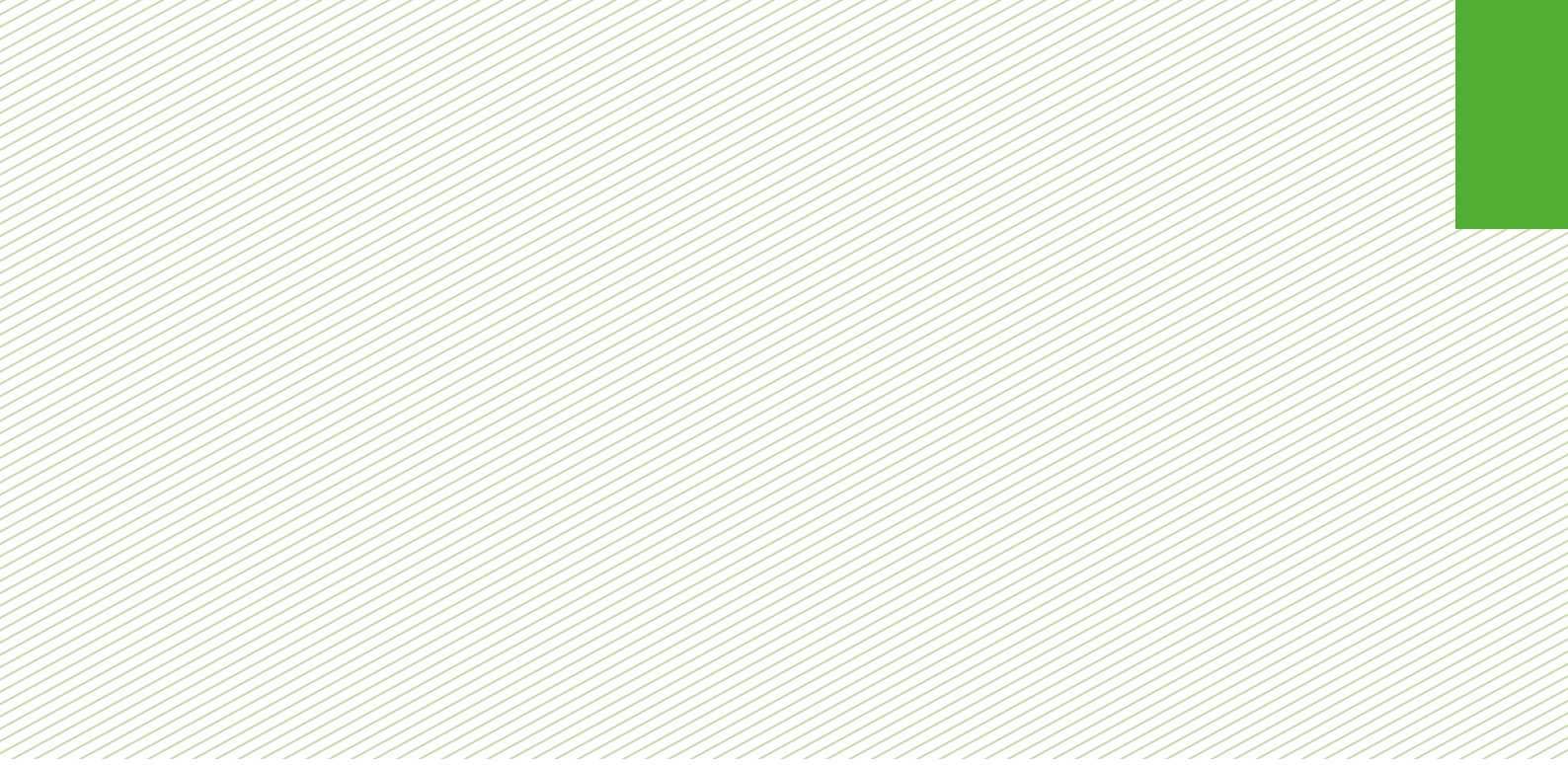





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Introduction



Is our food safe?


Today, we take it for granted that we will always have access to a wide range of food. We also expect the products on offer to be safe for human health, and rightly so. The producers and retailers are responsible for this and are strictly supervised through official food controls. Protection against dangers to human health has top priority with regard to food.

The agricultural sector, processing, wholesalers, retailers, control authorities, the scientific community and the political sector each have specific responsibilities and tasks to achieve this goal. The high food safety standards

achieved in Europe and Germany are the result of a continually evolving network for risk reduction. Ensuring food safety is an ongoing task in light of the international flow of goods and continuous further development of products, manufacturing processes and distribution forms.

In this brochure you will learn about the basis of the food safety system, how food safety control works and what the risks are. The facts, figures and examples contained in this publication reflect what is necessary to ensure a high level of protection.



A person wearing a blue and white checkered shirt is holding several stalks of wheat in a field. The wheat is golden-brown and has long, thin awns. The background is a blurred field of similar wheat stalks.

1 What is the basis of food safety?

A system that ensures our food is safe and poses no danger to human health can only work when responsibilities and tasks are clearly assigned - this includes farmers in grain fields as well as scientists in food laboratories. Therefore the legal framework for the production of food in the European Union has, to a large extent, been harmonised. The „from farm to fork“ approach is applied throughout the food chain.

THE SEVEN BASIC PRINCIPLES OF FOOD SAFETY



**FOCUS:
THE HACCP CONCEPT**

The most important quality management system for business operators in relation to food safety is the Hazard Analysis and Critical Control Points-Concept (HACCP).

For each HACCP procedure there are seven steps to be followed. 1. Conduct a hazard analysis, 2. Identify critical control points, 3. Establish critical limits, 4. Introduce a monitoring system, 5. Implement corrective actions in the case of deviations, 6. Establish record keeping procedures and 7. Produce documentation. In this way, the businesses can identify any risks in relation to food and establish a clear structure to avoid any such risks arising.

The HACCP concept was developed in 1959 at the initiative of the American Space Agency NASA with a view to ensuring that the food provided for astronauts was 100 percent safe to consume. The HACCP concept was enshrined in German Law for the first time by the Food Hygiene Ordinance (1998). The concept was then incorporated into European law in 2006 when the so-called EU Hygiene package came into force (see page 10 on the EU Hygiene Regulation).

Principle 1: Corporate responsibility

Whether a farmer, baker, butcher, food company or supermarket, everyone involved in the production and distribution of food or feed is responsible for ensuring that their products are safe for human health and comply with the existing requirements under food law. They are therefore required to exercise their duty of care.

All those involved in the food production chain must ensure the safety of a food product within their area of responsibility. This must be done using appropriate measures such as in-house controls.

Should a manufacturer, retailer or restaurateur not comply with the duty of care, this can have serious consequences. Food that does not meet the legal requirements for hygiene, residues or labelling and that is deemed unsafe must be taken off the market. This can be ordered by the competent control authority. In addition, food business operators are liable under civil law and potentially also under criminal law for any damage caused by defective products.

Principle 2: Traceability

Since 2005, all food business operators in the EU have been required to do more than just document where their food has been sent. Now they must also be able to document where their food or raw materials come from. This means that in the case of contamination the source can be found more quickly and if necessary food from the same batch can be recalled from the retailers. For this reason, all food packaging contains a batch number or a date. This enables manufacturers and control authorities to identify what batch the product is from. A batch refers to a certain quantity of food that was manufactured and packaged under the same conditions within a particular time frame.

Foods of animal origin such as milk and meat products are also given an oval-shaped identification mark. This mark identifies the establishment which last processed or packaged the food.



Principle 3: Official food and feed controls

The food and feed control authorities of the federal states are responsible for checking whether food-law requirements have been complied with. This entails, in particular, reviewing in-house controls carried out by food business operators (testing the tests). This is done through risk-oriented reviews and targeted sample collection with varying focuses each time. Sensitive foodstuffs are inspected at more regular intervals. Establishments that

HOW DO OFFICIAL FOOD CONTROLS WORK?

Food inspectors from the federal states collect samples in accordance with a sampling plan, but also in response to information from consumers or if any irregularities are found (suspect samples). Such controls are carried out, for instance, in meat processing plants, bakeries, large-scale kitchens, dining establishments of all kinds and in the retail sector.

These controls are carried out without prior notice. All areas of the business premises (e.g. production, storage, refrigeration rooms and the shop floor), objects (e.g. knives, work surfaces), waste areas, transport vehicles and documentation are inspected at regular intervals.

Should any deficiencies be found, the official food control authority is responsible for ensuring that these are addressed immediately. The authority may take any of a number of different measures, up to and including shutting down the business or establishment in question.

The penalties applicable if regulations are breached fall within the remit of the regulatory and judiciary authorities of each federal state.



are operated in an exemplary manner will not be inspected as regularly as those where deficiencies have been identified.

WHAT IS INSPECTED?

<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Microbiological composition <input checked="" type="checkbox"/> Residue <input checked="" type="checkbox"/> Contaminants <input checked="" type="checkbox"/> Other unwanted substances 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Sensory composition <input checked="" type="checkbox"/> Composition <input checked="" type="checkbox"/> Correct labelling
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Principle 4: The precautionary principle

Risks cannot always be conclusively determined by science, for instance if a previously unknown contaminant is discovered. In this case, the precautionary principle is applied which allows for the competent authorities to take precautionary measures with a view to minimising any risks. Any measures taken must be appropriate and reviewed as soon as new scientific data are made available.



FOCUS: ACRYLAMIDE

The precautionary principle was applied, for instance, for the contaminant acrylamide. In 2002, Swedish scientists succeeded in proving for the first time that this substance was formed when some starchy foods such as french fries, crisps and crispbread were heated. At that time, the dangers of this substance were still unknown. That is why acrylamide concentrations were at first gradually reduced in Germany and Europe. A reliable risk assessment on the potential dangers to human health was only published in 2015, which confirmed the carcinogenic effect of the substance.

Against this background, the European Commission adopted a Regulation establishing mitigation measures and benchmark levels for the reduction of the presence of acrylamide in food on 20 November 2017 [Regulation (EU) 2017/2158], which has been directly applicable in all Member States since 11 April 2018.

In the future, there will also be binding maximum levels for acrylamide.

Principle 5: Independent scientific risk assessment

How do you ascertain how great the risk to human or animal health is? How do you estimate the significance, for instance, of antibiotic-resistant bacteria for the livestock industry or of dioxin in feed for food safety? At federal state level, these tasks are carried out by public control authorities. The competent authority at national level is the Federal Institute for Risk Assessment (BfR). The BfR conducts its work freely and independently of political, social and economic influences, investigating and assessing risks posed to human and animal health in food and feed.

The BfR conducts research even when the data are not sufficient for a risk assessment. It then informs the public of the findings (risk communication).

Principle 6: Separation of risk assessment and risk management

A clear distinction is made between scientific risk assessment on the one hand and risk management, which is conducted by policy-makers and authorities, on the other. This means: firstly, the scientists draw up their statement of views, independently of any influence from policy makers or industry, and only then do the risk managers get involved.

Risk management relates to issues such as: What measures are appropriate? What section of the population needs to be especially protected? What risks are acceptable and at what cost? The central federal authority for risk management is the Federal Ministry of Food and Agriculture (BMEL) in close cooperation with the Federal Office of Consumer Protection and Food Safety (BVL). The expert decisions and measures taken by the ministry are based on the independent scientific risk assessment conducted by the BfR. A clear distinction between risk assessment and risk management has been enshrined in both European and German law since 2001.



EU Regulations on food safety

At EU level, food law requirements have been harmonised to a great extent and consequently the same food safety provisions apply in all Member States. A number of legally binding regulations (EU Regulations) form the basis of these provisions, the most important of these are:

- **The Basic Regulation** [Regulation (EC) No 178/2002]: This regulation lays down common principles and definitions for national and Community food law and is applicable at all stages of food production, processing and distribution including primary production. It lays down procedures for matters with a direct or indirect impact on food and feed safety.
- **The Hygiene Regulation** [Regulation (EC) No 853/2004]: The regulation applies to food business operators and lays down hygiene requirements for all foods at all stages of production, processing and distribution. The Regulation also requires the application of Hazard Analysis and Critical Control Point principles (HACCP concept, see page 3) in the production of foodstuffs.

- **The Control Regulation** [Regulation (EU) No 2017/625]: In order to ensure compliance with the high standards set within the EU, official controls are carried out. The Controls Regulation is aimed at control authorities and lays down the responsibilities of the competent control authorities at national and European level.
- **The Food Information Regulation** [Regulation (EC) No 1169/2011]: The provisions laid down in the Food Information Regulation have been in force since December 2014 and are uniformly and directly applicable throughout the EU. The regulation contains requirements for improving legibility (e.g. minimum font size on prepacked foods), clear labelling of food-imitations, improving allergen labelling on prepacked foods, obligatory labelling of allergens on non-prepacked foods and mandatory provisions governing nutrition labelling of foodstuffs. www.bmel.de/lebensmittelkennzeichnung

Principle 7: Transparent risk communication

Risk communication always takes place on several levels. Scientists consult on the scope of a newly emerging risk. The political sector, economic sector and scientific community discuss the consequences listed in the scientific risk assessment. Policy-makers decide on appropriate risk mitigation measures.

The public is then informed by the public relations department of the competent federal-state or federal authorities. If, despite all measures taken by the food business operator, a food product that poses a potential risk to human health enters the market, consumers will be informed. This happens initially in the form of a recall by the relevant food business operator. In addition, the authorities inform the federal states via the specially designed internet portal for unsafe products that has been set up at the BVL. www.lebensmittelwarnung.de



WHO ELSE PROVIDES INFORMATION ON FOOD AND NUTRITION?

1. Stiftung Warentest tests products and services in independent institutions using scientific methods. Food tests include tests for microbial risks and contaminants. The results are published in the journal “test”, in other expert publications and online. Since Stiftung Warentest was established, over 100,000 products and services have been tested. www.test.de

2. The Federation of German Consumer Organisations (vzbv) is the umbrella organisation for 16 consumer advice centres of the federal states and for 25 other consumer associations. It represents the political interests of consumers and supports them in implementing their rights. Through advanced training and uniform advice standards, the organisation ensures that a high standard of consumer advice is maintained throughout Germany. www.vzbv.de

3. The Federal Centre for Food and Nutrition (BZfE) provides neutral and scientifically substantiated information on eating and drinking. www.bzfe.de/

4. The German Nutrition Society (DGE) deals with issues related to nutrition. It provides non-material support for research on nutrition and informs the public on new findings and developments through publications and events. The DGE develops recommendations, founded on a solid scientific basis, for a wholesome diet e.g. in the form of “The DGE’s 10 rules”. www.dge.de



1.

2.

3.

4.





2 Who controls food safety?

Most of our food goes through many stages before arriving on our plates: From the production and transport of raw materials right through to processing, packaging and finally delivery to wholesalers and retailers. To avoid any risks during this process, those involved need to both ensure the safety of their product within their area of responsibility and also know who their contacts are in the case of any issues.

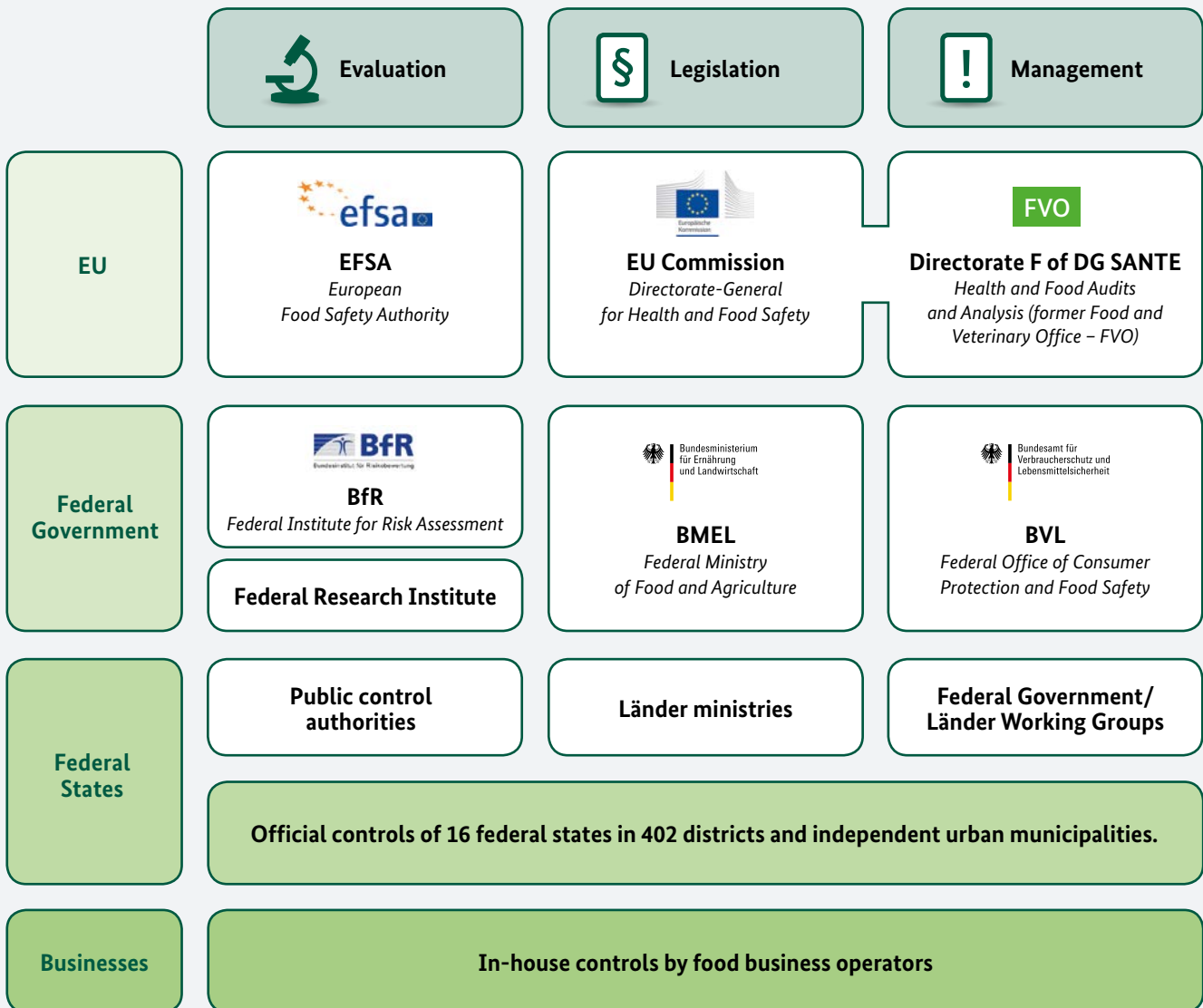


Safety at all levels

Food safety takes place at many levels within a network of manufacturers, inspectors, scientific assessments in laboratories and official risk management. Whether an industrial enterprise, a farmer, a baker, a butcher or a restaurateur: those involved in food production are responsible for ensuring the food has the proper composition, characteristics and labelling. Food inspectors, official veterinarians and food chemists in cities and districts inspect in-house controls, correct labelling, the hygiene of rooms, working tools and staff and much else besides.

They also take food samples, five samples per 1 000 inhabitants each year to be precise, which are then tested in laboratories for contaminants, residues and disease-carrying organisms. These monitoring activities are coordinated by the ministries of the respective Länder. The BVL coordinates nationwide monitoring programmes with the federal states and the results are then put together to give an overview for Germany. The BVL is also the national contact point for the European Rapid Alert System for Food and Feed (RASFF).

FOOD SAFETY NETWORK



The federal states – monitoring from farm to fork

Official food and feed controls play an important role in food safety in the federal states. The official food inspectors conduct controls everywhere where food is manufactured or sold - at specialised food traders (e.g. butchers, bakers etc.), in the food industry, in supermarkets and weekly markets and in restaurants and canteens. The feed inspectors carry out controls both on farms and at all stages of production and trade. They conduct on-site controls and take samples. Food and feed control and inspection takes place on a risk-oriented basis. Higher risk establishments are inspected more regularly. In the food industry, each year an average of 400,000 samples are taken and over 500,000 establishments are inspected nationwide. In 2019, approximately 45,900 irregularities were found, more than half of which were related to the labelling and packaging of foods. Impurities, contamination, mycotoxins or pesticide residues exceeding the acceptable levels were detected in 6.3% of the samples. These data are collated by the BVL, which coordinates the nationwide one-year monitoring plans and the multiannual national control plans with the federal states. www.bvl.bund.de



WHAT WERE THE RESULTS OF FOOD CONTROLS IN 2019?

Establishments inspected:
506,916

Of which irregularities found in:



Irregularities in detail:

General hygiene in establishments:



Deficiencies in hygiene management:



Food labelling and presentation:



Food composition:

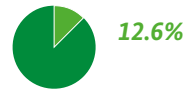


Other infringements:



Samples tested (food and commodities)
363,636

Of which irregularities found in:



Irregularities in detail:

Food labelling and presentation:



Microbiological contamination:



Other infringements such as violation of classification scales:



Composition:

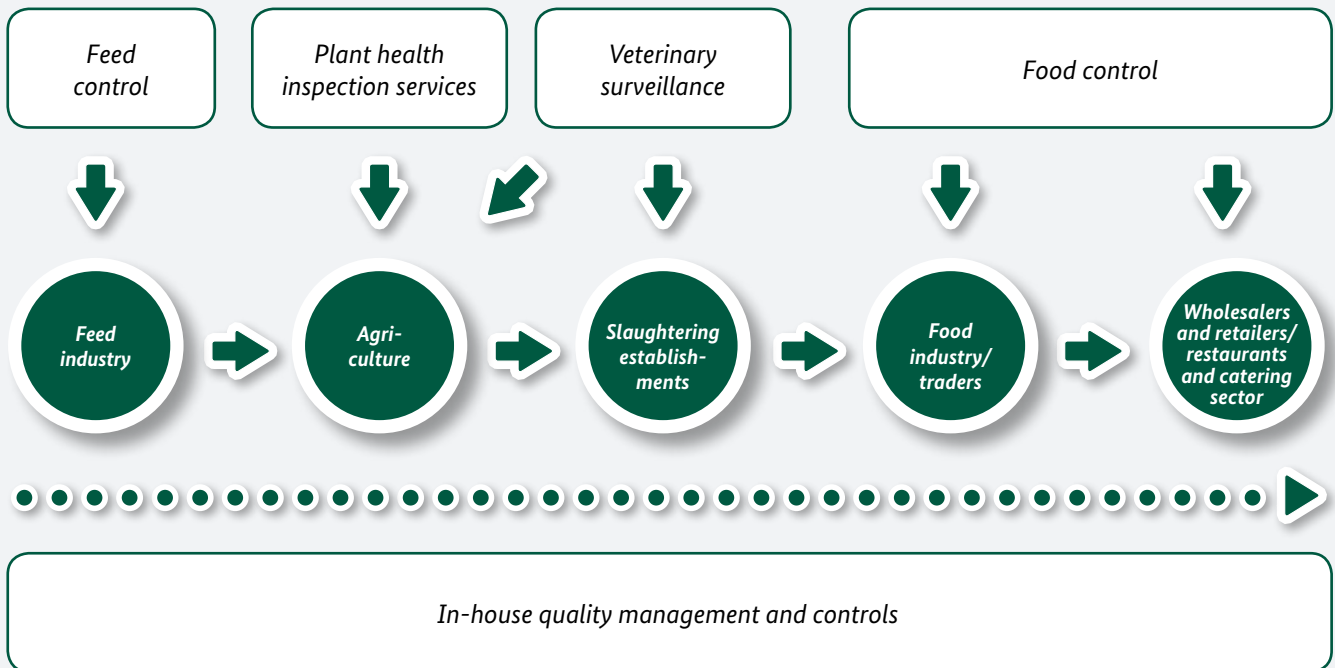


Contamination such as foreign bodies, mycotoxins, pesticide residues, acrylamide:



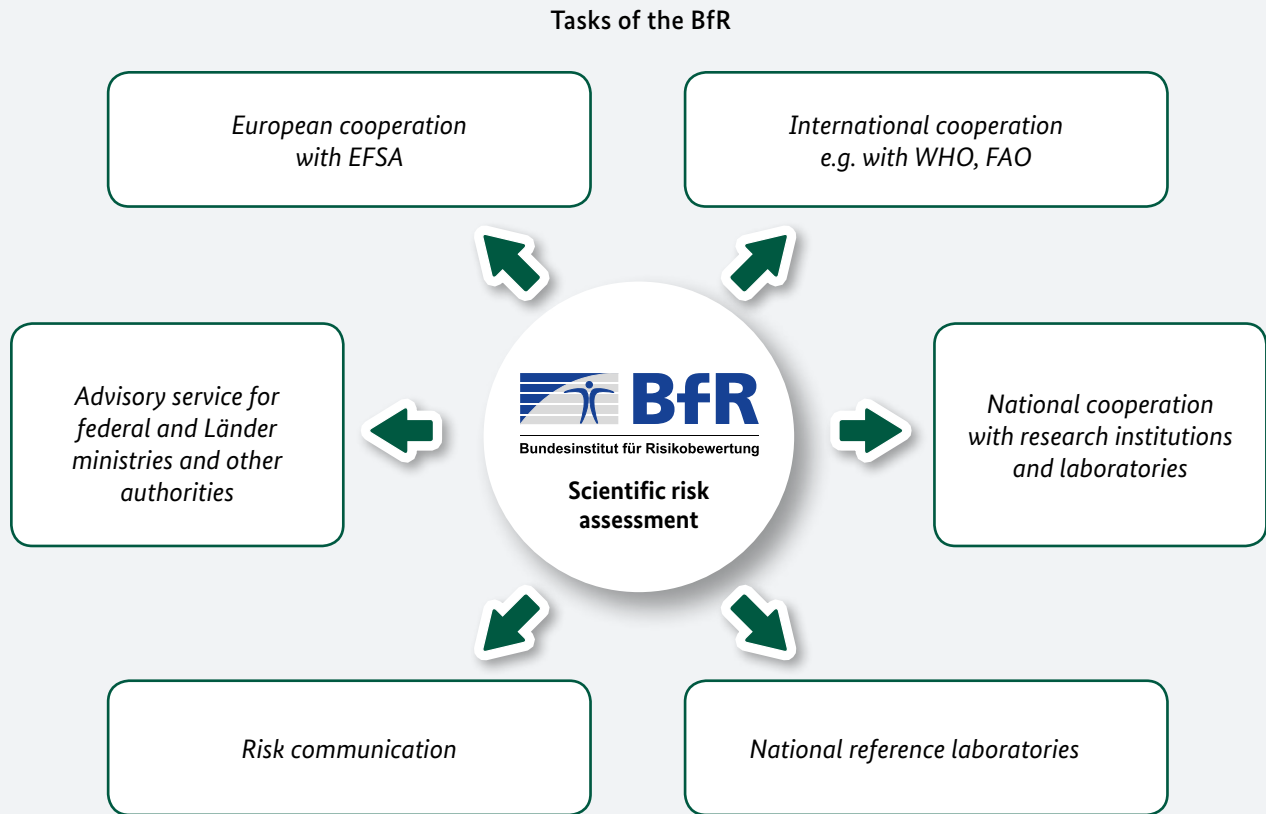
Source: BVL, 2019 Annual report of the Federal Republic of Germany on the multiannual National Control Plan under Regulation (EC) No 882/2004

CONTROL AND INSPECTION ALONG THE FOOD CHAIN



**FOCUS:
FOOD MONITORING**

Food control and inspection is supplemented by food monitoring, an assessment and monitoring scheme conducted by the federal government and federal states and coordinated by the BVL that serves preventive consumer health protection. Samples are taken representatively for Germany rather than on a risk-oriented basis. Each year, approximately 9,000 samples are taken nationwide from food, cosmetic products and commodities of domestic and foreign origin and tested for concentrations of substances that are hazardous to health. Such substances include, for instance, pesticide residues, heavy metals and mycotoxins. The results are then fed into the health risk assessment system in order, for example, to review the maximum permissible levels of undesirable substances. www.bvl.bund.de



The Federal Institute for Risk Assessment

The Federal Institute for Risk Assessment (BfR) is a scientific institution which produces expert reports and opinions on issues relating to food and feed safety and on the safety of chemicals and products. Its work focuses on independent, scientifically supported evaluation and research and the communication of risks on the basis on internationally recognised criteria. For example, the BfR assesses the potential health hazards posed by bacteria, viruses and parasites in foods. The BfR also informs the public about its findings and results (transparent risk communication). www.bfr.bund.de

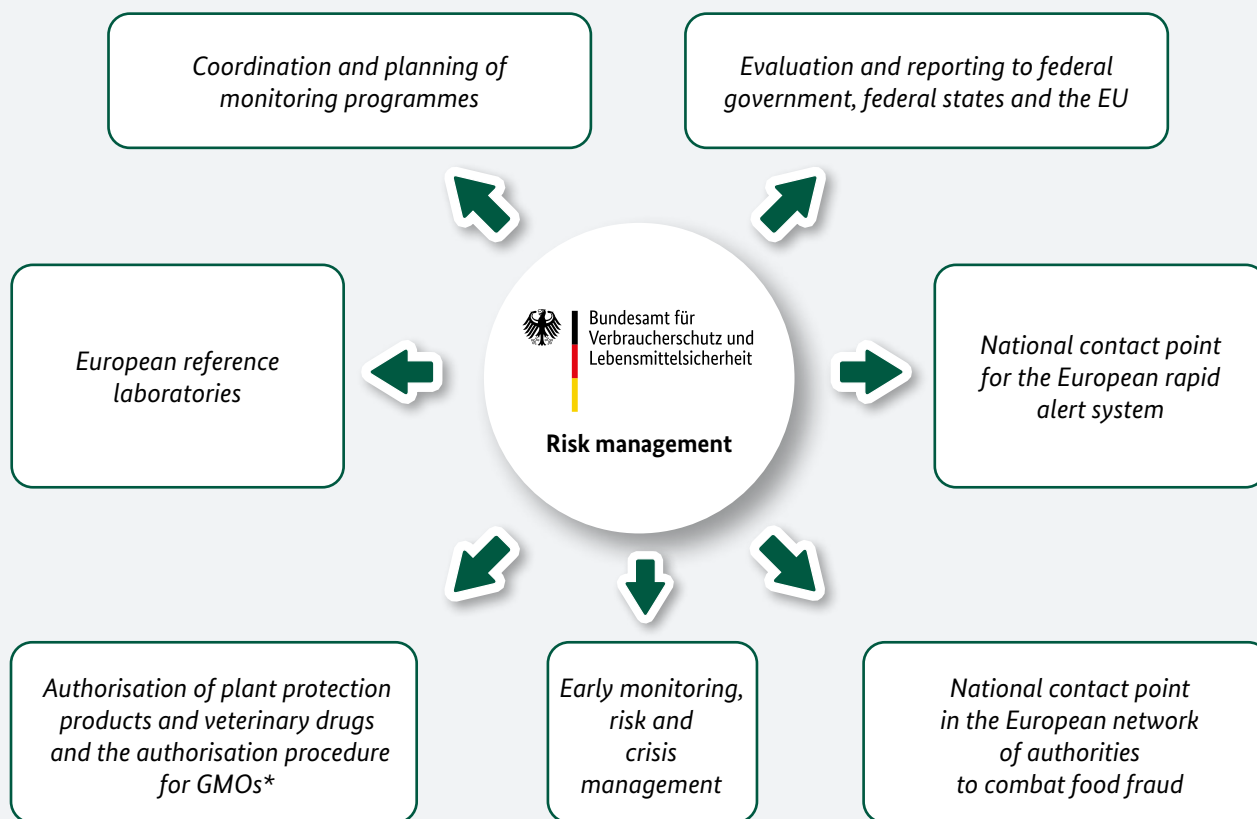
The Federal Office of Consumer Protection and Food Safety

Data from the monitoring and information on food safety are collected and brought together in the Federal Office of Consumer Protection and Food Safety (BVL). Working on the principle of managing risks to avoid crises, the BVL strives to identify risks that could lead to a crisis as early as possible. The BVL coordinates risk

management between the federal government and federal states. In the case of a crisis, the crisis management centre is set up in the BVL. The BVL is also responsible for the authorisation of plant protection products and veterinary drugs, and for the authorisation procedure for genetically modified organisms; moreover, it conducts innovative risk management to combat food fraud. Since 2013, the BMEL has been assisting the federal states in monitoring online trade in food by means of the Common Central Unit on “Control of Food, Feed, Cosmetics, Consumer Goods and Tobacco Products Traded on the Internet” (G@ZIELT) located at the BVL. On the basis of an administrative agreement concluded between the Federal Government and the federal states, the Central Unit, on behalf of the federal states, searches for offers of food, feed, commodities, cosmetics and tobacco products on the Internet that need to be controlled. www.bvl.bund.de



Tasks of the BVL



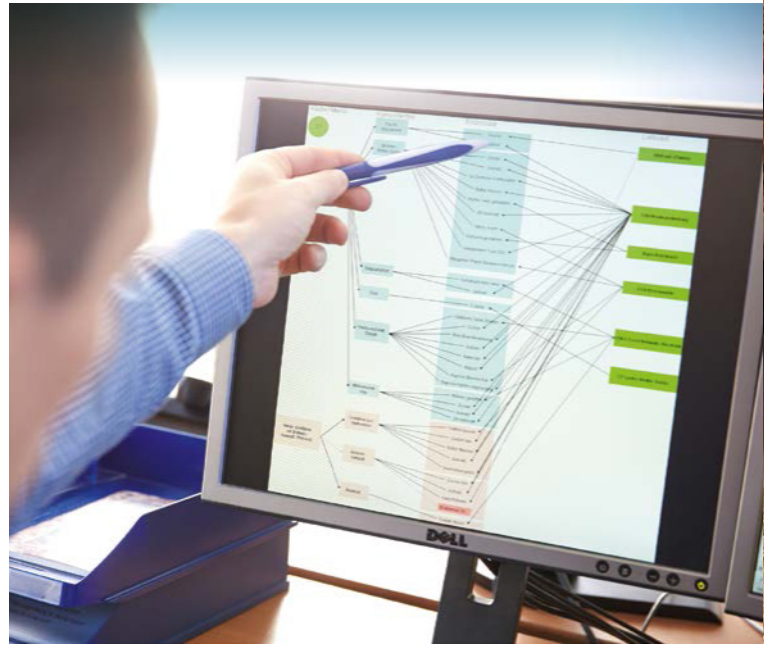
* Genetically modified organisms

Who else researches food safety?

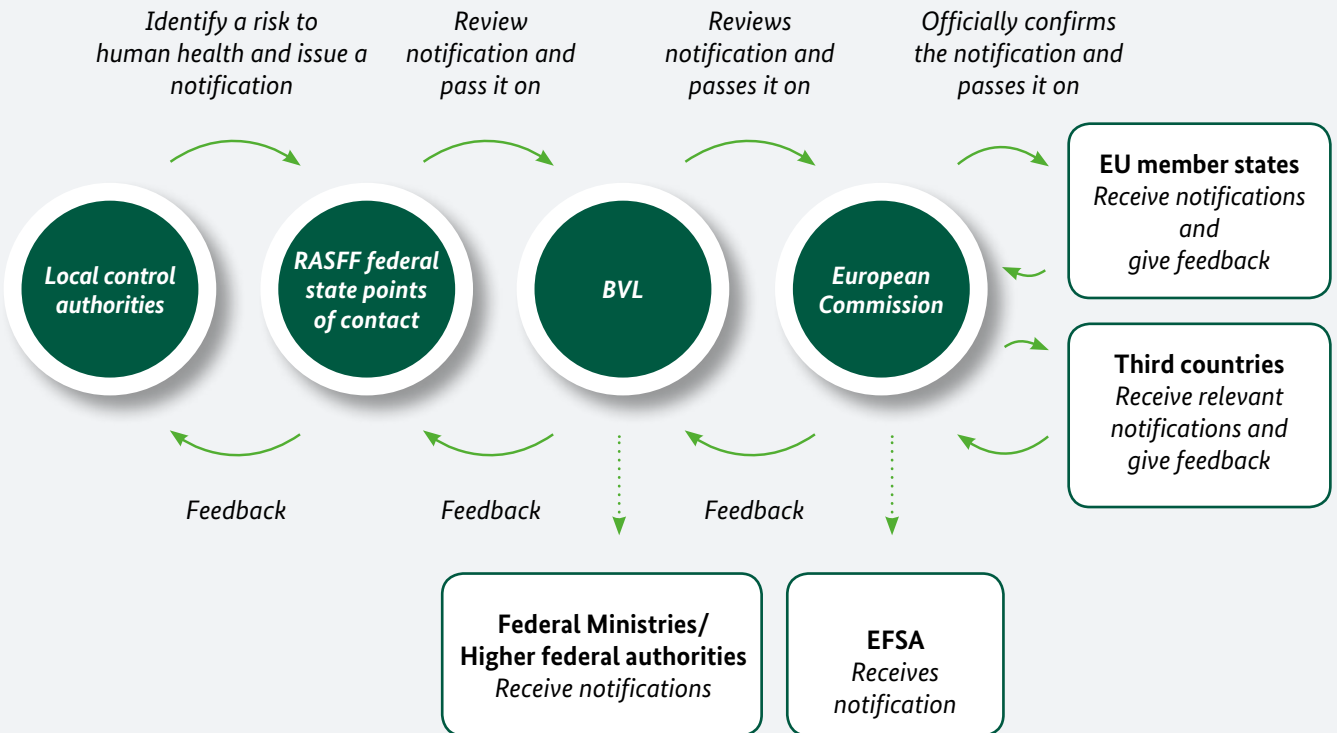
- **The Max Rubner Institute (MRI)** – Federal Research Institute of Nutrition and Food deals with consumer health care in the field of food and nutrition and with improving and safeguarding food quality. The institute’s work includes research projects on the impact of functional foods such as probiotic yoghurts and on the contamination of fish and meat with harmful substances. As health is influenced not just by the foods themselves, but also by nutritional behaviour, the MRI provides an overall picture of nutrition in Germany through the National Food Consumption Study (NVS) and the continuous National Nutrition Monitoring (NEMONIT). www.mri.bund.de
- **The Friedrich Loeffler Institute (FLI)** – Federal Research Institute for Animal Health conducts research on farm animal health and welfare and on the protection of humans from zoonotic diseases i.e. diseases which can be transmitted from animals to humans. The work of the FLI is also aimed at improving farm animal husbandry in compliance with animal welfare, preserving the genetic diversity of farm animals and supporting efficient animal food conversion. www.fli.de
- **The Julius Kühn Institute (JKI)** – Federal Research Centre for Cultivated Plants focuses on the sustainable cultivation and use of cultivated plants as food resources, renewable resources and essential elements of our living environment. It also works to preserve plant diversity in agricultural landscapes. The JKI’s fields of competence comprise plant genetics, breeding research, plant protection, plant health, plant cultivation and soil science. www.julius-kuehn.de
- **The Johann Heinrich von Thünen Institute (TI)** – Federal Research Institute for Rural Areas, Forestry and Fisheries works on developing concepts for making agriculture, the food industry, the forestry and wood-based industry, marine fisheries and aquaculture sustainable, ecologically viable and competitive. The TI scientists devote their time to areas such as the effective reduction of unwanted bycatch in the fishing sector, socially acceptable animal husbandry and the impact of climate change on forests. www.thuenen.de

The European Food Safety Authority

The European Food Safety Authority – EFSA (based in Parma, Italy) is responsible for carrying out the independent scientific risk assessment for food and feed at EU level. The EFSA conducts its work without any influence from politics or industry. Scientific expertises and recommendations issued by the EFSA are used by the European Commission, the European Parliament and the EU Member States as the basis for efficient risk management. The EFSA works closely together with the relevant institutes in the EU Member States. The EU Member States each have an EFSA Focal Point which acts as the central point of contact – which in Germany is the BfR. www.efsa.europa.eu/de



HOW DOES THE EUROPEAN RAPID ALERT SYSTEM FOR FOOD AND FEED (RASFF) WORK?





FOCUS: EUROPEAN RAPID ALERT SYSTEM FOR FOOD AND FEED

Information on potentially unsafe food and feed must be exchanged between EU Member States as quickly as possible. The European Rapid Alert System for Food and Feed (RASFF) was set up for this reason. The RASFF contributes to ensuring that potentially health-damaging products cannot enter or are taken from the market. Different notifications are issued depending on the risk and urgency:

Alert notifications are sent when a food or feed product presenting a serious health risk is on the market and when rapid action is required.

Notifications on border rejections: concern food and feed consignments from third countries that have been tested and rejected at the external borders of the EU (and the European Economic Area – EEA) when a health risk has been found.

Information notifications are used when a risk for human health has been identified about food, food consignments or feed placed on the market, but the other members do not have to take rapid action. This is because the product has not reached their market or is no longer present on their market.

www.bvl.bund.de/rasffmeldung

The European Food and Veterinary Office

The same food safety standards apply throughout all EU Member States. The European Commission regularly reviews compliance with them. These standards must also be upheld by those bringing food into the EU. For this purpose, Directorate F of Directorate-General SANTE (formerly the Food and Veterinary Office of the EU – FVO), headquartered in Grange/Ireland, draws up an inspection programme each year that sets out the inspection missions to the different EU Member States. The results of every audit are documented in a report together with conclusions and recommendations, and sent to the competent authorities of the country visited. An action plan must then be submitted by the authorities to Directorate F to address any deficiencies that were discovered. Directorate F checks their implementation through follow-up checks.

EU INITIATIVE: BETTER TRAINING FOR SAFER FOOD

The European Commission's "Better Training for Safer Food" initiative was set up to improve the efficiency of controls. Training is designed for staff at the competent control authorities in EU Member States who are involved in the areas of food and feed control, animal health, animal welfare and plant health. The aim is ensure that controls are carried out in a more uniform manner in all Member States. In addition, participants from third countries receive training about the requirements that are to be met when exporting to the EU.



3

What are the risks?

The term risk gives no indication of how big or small the danger is. Risk simply means that there might be a danger. Therefore, it is important for risk managers to know how a risk is evaluated. A distinction can be made between subjective and objective risks.



Subjective and objective risks

An example of a subjective risk would be food additives. Food additives can only be used in concentrations that are objectively safe for human health according to the latest scientific knowledge. They must undergo a stringent approval procedure which includes a comprehensive health assessment. The assessments are also reviewed regularly if new findings are presented. In spite of this, many consumers subjectively consider additives to pose a health risk.

In contrast, it is the task of the scientific risk assessment process to determine when an objective risk exists and how great this risk is. Based on this, precautionary and management measures are then taken to limit and minimise risks: a food product may, for example, be taken off the market at short notice or more stringent maximum permissible levels laid down in the medium term.

Example: Kitchen hygiene

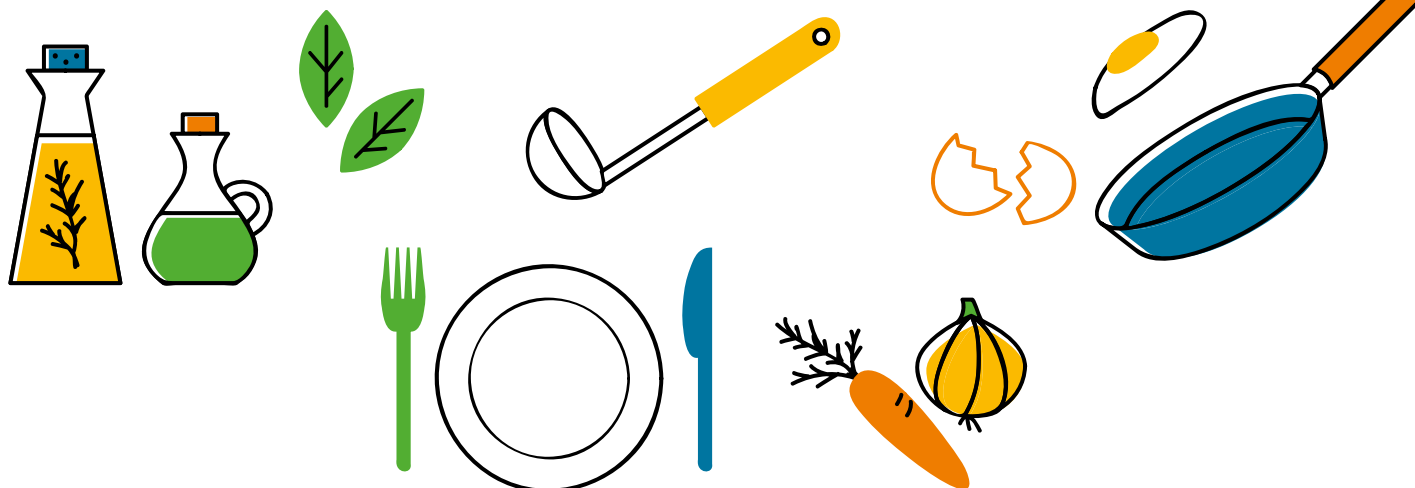
Food may contain microorganisms (bacteria, viruses or parasites) that not only cause spoilage, but may also lead to foodborne infections or food poisoning, thus posing a serious risk to human health. Disease-carrying organisms may multiply quickly in foods and cause illness, particularly when the food is stored or prepared improperly; this risk is especially high in the case of perishable food or food that must be kept refrigerated. Every year in Germany there are more than 100,000 cases of illness reported that may have been caused by the presence of harmful microorganisms in food, the number of unreported cases is probably much higher. Vulnerable sections of society such as children, the elderly, pregnant women and persons with a weakened immune system are particularly at risk.

How is kitchen hygiene achieved?

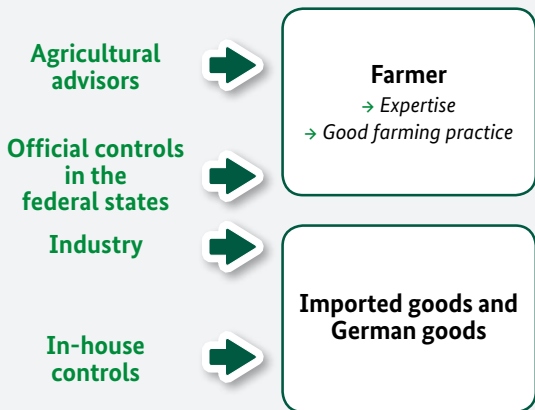
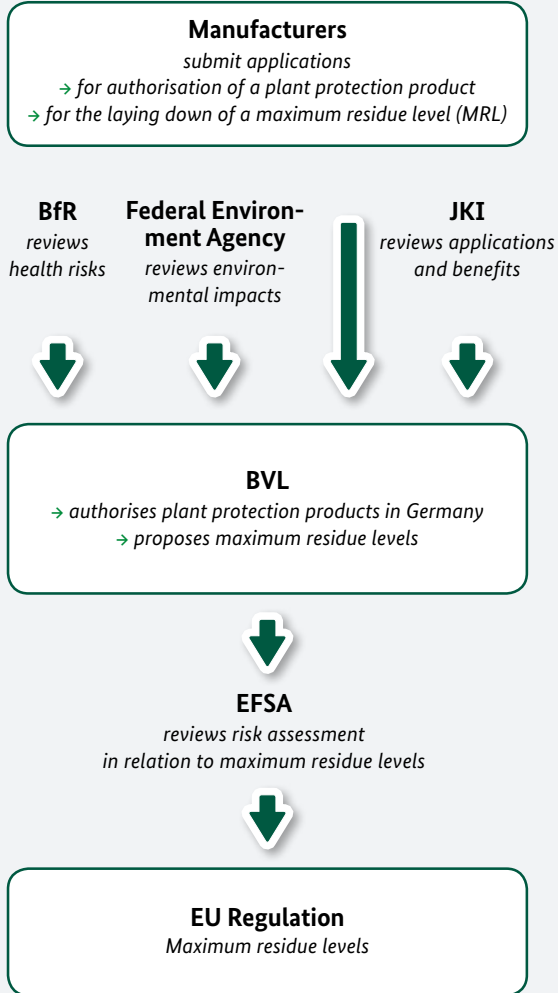
1. Transport deep-frozen and perishable foods such as minced meat or fish in a cooler bag and put them in the fridge as soon as possible.
2. Set refrigerator to a maximum temperature of 7 °C, preferably 4 °C.
3. Defrost deep frozen food in the refrigerator and do not leave it in the melted water after it has thawed.
4. Wash hands before and after food preparation. Thoroughly clean or wash fresh foods.
5. Always clean work surfaces and kitchen appliances thoroughly. Use separate chopping boards for meat, for vegetables and for herbs.
6. Always prepare dishes that do not require cooking e.g. salads, first. Then prepare food that requires cooking such as meat and poultry.
7. When preparing or reheating food, always heat thoroughly. Always cook meat and fish thoroughly (cook until the food has been at a core temperature of at least 70 °C for two minutes).

Disease-carrying organisms are spread in the kitchen through so-called “cross-contamination”: Microorganisms, mainly from raw foods, are transmitted via hands, work surfaces, knives and other kitchen utensils. Disease-carrying organisms can survive and multiply when food is being cooled or heated up. This is why consumers must take responsibility themselves for food safety at home.

www.bzfe.de
www.bfr.bund.de



CONTROL AND INSPECTION CHAIN FOR PLANT PROTECTION PRODUCTS FROM FARM TO FORK



Example: Contaminants

‘Contaminant’ means any substance not intentionally added to food which is present in such food as a result of the production or processing of the food. This includes for example polycyclic aromatic hydrocarbons (PAH) in smoked foods and grilled meat. Natural contaminants include mycotoxins in grains and nuts and plant toxins in tea and honey. Substances are released into the environment from industrial processes and exhaust emissions e.g. dioxins and heavy metals that can contaminate food. The presence of contaminants in food should be minimised as much as possible. EU Regulation (EC) No 1881/2006 setting maximum levels for certain contaminants in foodstuffs constitutes the legal basis for this.

Example: Pesticide residues

Farmers use plant protection products to protect their crops from diseases, crop pests and weeds. But how are consumers and the environment protected from unwanted side effects?

Before a plant protection product can be used it must undergo a strict authorisation procedure. As the German authorising authority, the BVL coordinates this procedure and works closely with other authorities: the BfR, the Federal Environment Agency (UBA) and the Federal Research Centre for Cultivated Plants (Julius Kühn

WHAT DOES MAXIMUM RESIDUE LEVEL MEAN?

A maximum residue level is the maximum allowable concentration of the residue of an active plant protection substance in or on a food product. Maximum residue levels are calculated based on the ALARA principle, which stands for

- *as low as reasonably achievable,*
- *i.e. never more than necessary or as much as is needed to ensure the product is effective,*
- *never more than is acceptable from a health point of view.*

Regulation (EC) No 396/2005 also calls for the health risks to particularly vulnerable groups such as children and unborn children to be taken into account in the calculation of maximum residue levels.

Institute – JKI). They test to see whether the plant protection product is sufficiently effective, safe for humans and animals and is acceptable in terms of its effect on the environment.

Every farmer using plant protection products must be well-informed. Farmers may only use authorised plant protection products, must adhere to the principles for the implementation of good plant-protection practice and document every application of plant protection products. These records are checked by the inspectors of the phytosanitary services of the federal states.

Anyone who processes agricultural raw materials such as grain, fruit or vegetables, must carry out comprehensive in-house controls. The food control authorities of the federal states conduct on-site tests to check if maximum residue levels have been complied with in or on food-stuffs, both for German and for imported goods. If a maximum residue level is exceeded the food can no longer be sold. However, this does not mean that there is an acute health hazard as a high margin of safety is included when setting maximum residue levels.





EXAMPLES OF PLANT PROTECTION PRODUCTS EXCEEDING MAXIMUM LEVELS IN FOOD MONITORING



Apples
223 samples
2 exceeding
maximum level (0.9%)



Strawberries
233 samples
8 exceeding
maximum level (3.4%)



Lettuce
196 samples
2 exceeding
maximum level (1.0%)



**Peach,
nectarines**
208 samples
0 exceeding
maximum level



Tomatoes
217 samples
3 exceeding
maximum level (1.4%)

Plant protection in organic farming

Organic farming focuses on the preventive minimisation of plant diseases and pests. As far as possible, organic farmers select tried-and-tested plant varieties that are robust and less susceptible to disease. Cultivation measures such as multiannual crop rotation, fertilisation and soil tillage are also designed to minimise infestations occurring in cultivated plants through diseases or pests and to minimise competitors such as weeds as much as possible from the beginning. If treatment with plant protection products is unavoidable, organic farmers are only permitted to use the substances listed in the rules for the implementation of the EU basic regulation on organic farming. www.oekolandbau.de

Source: BVL, reports on food safety – Monitoring 2019

FOCUS: ANTIBIOTIC RESISTANCE

Antibiotics are the most important instrument for the treatment of infectious diseases. The problem: Strains of bacteria resistant to antibiotics are increasing worldwide both in veterinary and human medicine. As a result, antibiotics may become ineffective in treating sick people or animals.

The revised German Antibiotic Resistance Strategy 2020 (DART) therefore contains measures for the recognition, prevention and control of antibiotic resistance in the fields of human and veterinary medicine. Such measures include preventing diseases, developing new antibiotics, alternative therapies and improving diagnostics.

The BMEL antibiotics minimisation concept is a benchmarking system laid down in the German Act on Trade in Pharmaceutical Products (Arzneimittelgesetz). The system requires establishments keeping cattle, pigs, chickens or turkeys for fattening purposes to submit records of animal numbers and antibiotic treatments to the competent authorities every six months .

The therapy frequency of each enterprise are then compared to key national figures: if the therapy frequency of an establishment is above these key figures, the establishment is required to take steps together with their veterinarian to reduce the number of antibiotic treatments.

The concept also provides for the following measures in the field of agriculture and veterinary medicine:

- *Improve animal health through better husbandry conditions*
- *Further regulations in veterinary medicine legislation on restricted use of antibiotics*
- *Research and promotion of alternatives to using antibiotics*
- *Monitoring programmes for antibiotic resistance in the veterinary field and the food chain*

Example: Zoonoses

Microorganisms present food safety with different challenges from those posed by contaminants and residues, as microorganisms can usually multiply in food. Regardless of what point in the food chain they enter the food, it requires complex tasks to tackle them – from the development of suitable detection methods to effective control measures. Many agents of infectious diseases can be transmitted between animals and humans – these are known as zoonoses. The most well-known zoonotic pathogens transmitted through food are salmonella, campylobacter and listeria. Such pathogens can enter the food chain at different stages of production: during the production of feed, at the livestock farm, at the slaughterhouse, during food processing or at home in the kitchen. Even clinically healthy livestock can be contaminated with zoonotic pathogens. In poultry, for example, contamination can occur as a result of the slaughtering techniques used. Hygiene is crucial at all steps of production to avoid this and reduce the number of disease causing agents.



All EU Member States are required to record representative and comparable data on the occurrences of zoonotic pathogens in food, feed and live animals. Zoonoses monitoring has been carried out in the federal states annually since 2009 as part of official food and veterinary controls. The test results are collected and evaluated by the BVL and published together with the BfR assessment.



4 What progress is being made in food safety?

International flows of goods and new scientific findings continually present food safety with new challenges – and this will continue to be the case as global trade in agricultural commodities, feedstuff and food will continue to grow.



Food safety worldwide

It is imperative for food safety worldwide that globally traded products are safe and comply with internationally agreed standards. Anyone wishing to import agricultural goods into the European Union must also fulfil the statutory requirements that apply in the EU, as must all operators in the EU's single market. This is checked at the EU's official border crossing points (in Germany especially at Frankfurt/Main airport and at Hamburg harbour).

Codex Alimentarius

For more than 50 years now, international guidelines on food safety have been laid down by the Codex Alimentarius Commission (CAC). The Commission was set up in 1963 by the World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO) to develop globally accepted international food standards in consensus. Over 180 states and the EU, as a member organisation, work together in the general subject and commodity committees of which 17 are currently active. In its fifty-year existence, the CAC has adopted over 330 standards, guidelines and codes of practice.

For instance, if a German infant formula manufacturer wishes to export his products to Indonesia or if an American company wishes to export gluten-free foods to Europe, it should be clear to both parties what manufacturing standards apply. In this case they would refer to the Codex Standard for Infant Formula and Formulas for Special Medical Purposes Intended for Infants or also the standards for specific commodity groups such as fruit and vegetables or fish and fish products. Though the Codex Alimentarius Standards are not internationally binding law, they do form the basis of international trade in foods: The World Trade Organization (WTO) regularly uses the Codex Alimentarius standards as reference standards in dispute settlement procedures.

www.codexalimentarius.net

Further developing food safety

The German Government is actively involved in the work of the Codex Alimentarius with the aim of achieving a high level of consumer protection worldwide. Germany is for instance, both the Host and Chair of the Codex Committee on Nutrition and Foods for Special Dietary Uses (CCNFSDU).

Food safety is continuously being further developed through an ongoing dynamic process between the latest scientific findings on potential risks, the interest of industry in smooth trade and consumer expectations of a high-quality supply of food.



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