iMIS E-learning

Food safety for products

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Food safety

Food Safety

Food safety and hygiene have everything to do with each other. Whether work is done hygienically depends largely on how you and your colleagues work. This module provides information on food safety and hygiene. And how to work in the best possible way to avoid hazards that lead to a dangerous product. Hygiene is important for everyone!

Food Safety

Every year, more than one million people fall ill due to food poisoning. And those are only the people who report it to the doctor. So there are many more.
Food infections can cause a fairly harmless stomach infection or diarrhea. But people also die from food poisoning!
Imagine if tomorrow's newspaper reported that someone got sick or died after eating our products! Then the consequences are incalculable.
Now you think this doesn't happen but it happens more often than you think. Just think about:

- Salmonella in salmon
- People dying after eating products containing raw eggs
- Listeria in French cheeses
- Baby food containing disinfectant
- And managing allergens, due to the presence of an undeclared allergen such as peanut

Often products are recalled from the market in time but imagine if things really go wrong!

Ask yourself the question....do you want food that is safe or that you can get sick from?

Hazards

Hazards

To ensure that food is safe, every company must have a quality system that defines what hazards exist within the company and how these hazards are prevented or controlled. For us, this is BRC.

There are 3 types of hazards:
- Contamination of food with microorganisms (bacteria)
- Contamination with chemicals (cleaning agent etc)
- Physical contamination (plastic, glass, wood)

Microorganisms

Microorganisms

Food infections and food poisoning are caused by micro-organisms. Microorganisms are the bacteria, fungi, yeasts, germs and viruses. For all micro-organisms, they are so small (micro=very small) that they cannot be seen by the naked eye. Which is also where the greatest danger lies.

Bacteria

Bacteria can grow when water and nutrients are present. At a temperature between 20-40°C, bacteria grow fastest. However, at low temperatures they also grow! When the products are frozen, the bacteria no longer grow...but...they don't die either Water and nutrients are naturally present in our products. Some bacteria grow well with oxygen, but many can also grow with little or no oxygen. As the bacteria grow, the product is "eaten". This produces various waste products, the best known being acid. When a lot of growth has taken place, the product will therefore smell and taste sour. In the worst case, the product will also start to smell.

Pathogens

Some types of bacteria produce toxins that can make you ill (food poisoning) or even kill you. There are also bacteria whose bacteria themselves can make you sick or kill you (food infection).

The most well-known pathogens are:

- Salmonella
- Staphylococcus aureus
- Listeria monocytogenes

All three of these can occur in food. People can also carry these bacteria without knowing it and thus transmit them to food. Consider, for example, an infection. These are usually caused by Staphylococcus aureus.

Useful bacteria

Besides being harmful, there are also a large number of bacteria that are useful. Certain types of bacteria are used in the preparation of cheese and dry sausage. These ensure the ripening of the product.
However, the beneficial bacteria used for dry sausage, for example, cause spoilage in other products! So you don't want harmful bacteria in your product!

Fungi

A fungus consists of a network of several threads. Because of the thread formation, the fungus grows throughout the product. We cannot see the threads, but we can see the 'fruit'. Think, for example, of mushrooms, which are also a fungus.

When the mould is visible, it usually means that the entire product is full of mould threads and can no longer be eaten. So cutting off a piece of cheese where the mould is visible makes no sense either. Even the rest of the cheese will already contain mould!

Mould, like bacteria, can have both harmful and useful functions. Think, for example, of penicillin made by moulds or the 'blue mould cheese'. But moulds can also be very harmful. They have the ability to produce toxins that can cause cancer. So as with bacteria, here too, you don't want moulds in your final product!

Management measures

So as with bacteria, here too, you don't want moulds in your final product!

With this information, you have been able to get an idea of the different micro-organisms. In all cases, they should not be in the products because they can make you sick. To prevent microorganisms from getting into the products, various measures have been taken. Most of these are known to everyone. Consider:

- washing hands
- cleaning and disinfecting
- wearing clean work clothes etc.

Chemical contamination

Chemical contamination

In addition to dealing with microbiological contamination, from which you can become ill, bad chemicals can get into the product. Some examples of chemicals we use in our company are:

- Cleaning agent
- Disinfectant
- Chlorine
- Lubricating oil for machines etc.

Chemical contamination

Chemicals can cause you to fall ill and, in the worst case, die. So it is very important to pay close attention to this.

- ensure proper cleaning and disinfection, but also rinse thoroughly with water
- be careful where you apply lubricants
- be careful with the use of chlorine etc.
- Be alert to what you do and how you do it.

Physical contamination

Physical contamination

The last possible contamination is physical contamination.
Physical contamination includes:

- glass
- plastic
- wood
- screws
- nuts
- pieces of knife
- broken parts of a machine etc.

Physical contamination

You can imagine what can happen if a piece of knife gets into the product. When this is swallowed, the consequences are incalculable.

It is therefore important to pay close attention to machines, knives, windows and so on before you start work and while working.

Therefore, regularly check what you are working with.
So always report when you are missing a part or piece of something you are using!!!

HACCP and checks

HACCP and checks

To ensure that our products are safe, we have to carry out various checks and follow instructions.

The quality department, together with colleagues and experts, carries out the HACCP study. HACCP stands for Hazard Analysis and Critical Control Point. Based on a hazard analysis of raw materials and processes, we determine which hazards and risks must be safeguarded within our company by means of controls.

We carry out the following quality and safety checks

HACCP and checks

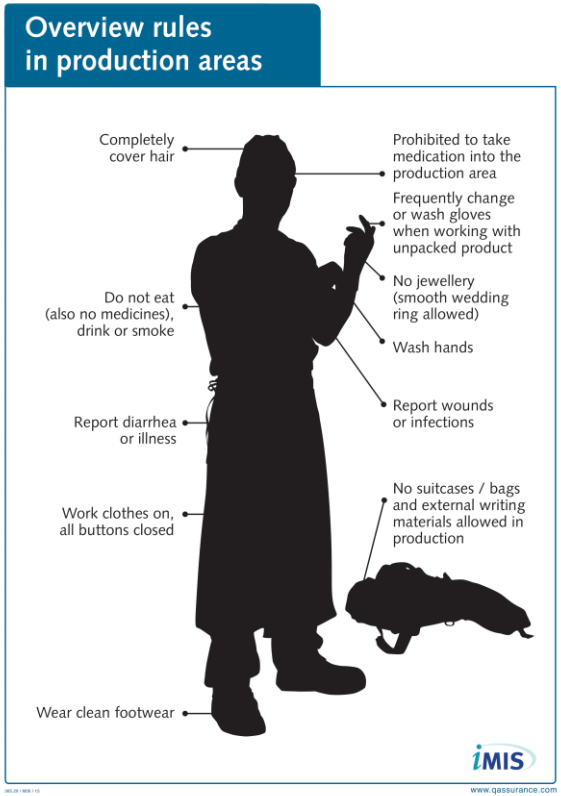
An example of a CCP (critical point) is metal detection. This involves checking that there is no metal in our product. It also looks at the quality of products, which must be suitable for intended use. Because there should be no foreign ingredients in products, it is important for everyone to pay close attention to their workplace. Think pens and plastic!

Besides the various checks, everyone has to follow hygiene regulations.

Hygiene regulations

Hygiene regulations

- Eat, drink or smoke in the production areas
- Wear false nails
- Use nail polish
- Smoking in company clothing
- Take food, drink and medication into production
- Spitting, sneezing or coughing above the products
- Wear jewelry. Jewelry that cannot be removed should be covered with blue, detectable plasters. Wearing earrings, watches and piercings is not allowed
- Use heavy perfumes or aftershaves.



Hygiene regulations

It is not permitted to enter the production in case of:

- Jaundice
- Diarrhoea
- Vomiting
- Fever
- Sore throat with fever
- Visibly infected skin patches (burns, cuts, etc.)
- Runny ear, eye or nose
- Other infectious diseases or illnesses that may compromise food safety

Hygiene regulations

One should:

- Cut fingernails short
- Cover beards and moustaches with a beard net
- Cover cuts and grazes with water-repellent detectable blue plasters. And disposable gloves if hands are involved
- In case of wounds, wear blue plasters. Other plasters are not allowed
- Wear the prescribed industrial clothing. Hair nets should cover hair and ears.
- Where prescribed, wear blue disposable gloves and replace them in time. At least every time contaminated material is touched and after every work interruption
- Wash and disinfect hands before entering the production area and before starting work.

Hygiene regulations

Other:
If employees carry an infectious disease or have been in contact with it, they should report this to the management or company manager. These arrange other work so that they do not participate in the processing or preparation of products, e.g. by having them do administrative work.

Allergen management

Allergen management

Allergens, are basically harmless, natural substances that cause an immune system reaction only in a small minority of the population. There are no precise figures on the number of people with food allergies in the Netherlands. It is estimated that 1-2% of adults and 1-3% of children have a food allergy.

Allergen management

A food allergy is a hypersensitivity reaction of the immune system to proteins in our food. The proteins that cause a reaction are called allergens. These proteins (allergens) are seen by the body as intruders, which must be rendered harmless. The body therefore reacts by forming antibodies. Every time the allergen is recognized, the antibodies immediately kick in. This is called 'sensitisation'. Each allergen has its own antibody. As a reaction, all kinds of substances are released in the body including histamine. We call this the allergic reaction. The symptoms of this reaction depend on where in the body this reaction takes place. The symptoms are usually limited to minor physical reactions such as temporary skin conditions, tightness of the chest and/or vomiting. In a small number of cases, however, the symptoms can be extremely severe and the consumer may go into a state of shock and even die.

Allergen management

Allergens can be divided into:

Food allergens: they enter the body through food.
Examples are: proteins in cow's milk and peanuts.
Inhalant allergens: they enter the body through inhalation.
Examples include: pollen or house dust mite excrement. Contact allergens: they enter the body through skin contact. Examples include: ingredients of cosmetics.

Legal obligation to declassify allergens in EU; Such as; gluten-containing cereals, milk, sesame, peanut, celery, fish, seafood, mustard, nuts....

Allergen management

Allergen management

All our allergens are transparent to the quality department. This applies to all raw materials, excipients and finished products. But also for the products used for product development.

Leakage of allergens or unintended presence of allergens (not declared on label) can occur, for example, due to:

- Presence in raw material while not declared in the raw material specification.
- Use of the wrong recipe or incorrect execution of the recipe.
- Incorrect statement on label or use of the wrong label or packaging.
- Inadequate effective cleaning.
- Incorrect planning sequence.
- Spillage via employees (hands, clothing, footwear).
- Broken or open packages.
- Spillage via tools, equipment, machinery, internal transport means, crates, buckets, shovels, measuring equipment, etc.
- Contamination via air (including ventilation system) or water.
- Spillage via tools of maintenance engineer.
- The risk analysis with regard to cross-contamination or carry-over of allergens takes into account:

Allergen management

The physical state of the allergens (e.g. in powder form, sticky substance or particle size). Potential places in the process where cross-contamination may occur. The physical state of the allergens within our company includes in powder form (excipients and raw materials) and incorporated into products. The greatest risk of cross-contamination therefore lies in the weighing and processing of these raw materials. We checked with our suppliers whether possible cross-contamination is mentioned on the specifications and/or label. If necessary, additional information is requested from the supplier via questionnaires in addition to the specifications. This can provide information on the presence of allergens in the raw materials, ingredients and possible cross-contamination in the factory or process.

Allergen management

Possible control measures include:

- physical separation; storage location, identification, specific department or line.
- separation in time (planning). Production takes place with the largest possible batches and the production order depends on the allergens (least allergens first).
- hygiene rules, dedicated clothing, materials, equipment. Changing off clothes before/after production or shedding.
- cleaning and disinfection, swabbing control, testing. Method depending on risk analysis (potential contamination above limits).
- positive release.
- visual control.
- waste management.
- food allowed in canteen.
- rework management.
- allergen management is part of internal audit and verification.

Food Defense

Food Defense

Food defense is a security approach aimed at preventing food from becoming contaminated through deliberate action. This makes food defense a complement to food safety, which focuses on preventing accidental contamination.

The field of food defense originated in the United States. After the attacks of 11 September 2001, the US government designated the food industry as one of its vital infrastructures. In 2002, the Bioterrorism Act was passed. In response, the Food and Drug Authority established food defense requirements.

Food Defense

These requirements apply to all US companies, as well as those exporting their products to the US market. Some of the requirements related to food defense are as follows

- Have a food defense plan.
- A security risk analysis.
- A food defense measures plan.
- Site fencing and access control.
- Awareness of food defense.
- Organization on food defense.

Food Defense

Food defense and food safety share the same goal: a safe product to protect consumer, brand and industry. However, the method and knowledge for food defense is totally different from food safety. For food safety, the HACCP method is used. However, this is not suitable for food defense. For food defense, security knowledge is required. It is also important that food defense measures do not disrupt production and logistic processes. In our company, appropriate measures have been taken for food defense. With the company security procedure, recall procedure and HACCP team sessions, we are continuously prepared and ready for Food Defense. In case of any sabotage, evacuation etc. takes place through the contingency plan.

Food Defense

The following points are leading for our company:

- Company management
- Preparation for possible tampering or other malicious, criminal or terrorist activities.
- Monitoring.
- Strategy for recalls.
- Investigation of suspicious activities.
- Evaluation program.
- Human factors - employees
- Screening (before, during and after employment).
- Daily work assignments.
- Identification.
- Access restriction.
- Personal belongings.
- Training in food safety procedures.
- Unusual behavior.
- Health of staff.
- Human factors - the public
- Visitors (e.g. contractors, representatives of suppliers, deliverers, clients, couriers, representatives of extermination companies, auditors from outside the company, inspectors, reporters, excursions).
- Business premises.
- Structural security.
- Laboratory security.
- Storage and use of toxic and poisonous chemicals (e.g., cleaning and disinfectants and pesticides).
- Operations
- Incoming materials and contractor work.
- Storage.
- Security of gas, light and water supplies.
- End products.
- Postal packages.
- Access to computer systems.

Pest control

Pest control

Pest nuisance can usually be avoided by taking some simple preventive measures.

Pests can endanger the safety of our products. To prevent this, pests are controlled and prevented, by an external specialized company. Various checks are also carried out internally to prevent possible contamination by pests. The frequency of controls is based on risk. The plan is reviewed annually or in case of an infestation or significant changes in the building, process, product or environment.

Pest control

External pest control
We use a specialized company for pest control. They have the necessary expertise to carry out pest control properly and must comply with all relevant legislation regarding training and registration of their activities and competences.

If shortcomings are found during inspections, corrective action is taken. This is done either by the external company or by ourselves and within the specified time. All measures taken are recorded and verified. A possible contamination should also be treated as a risk towards the product. The measure may therefore be greater than placing a new decoy device. For example, a gnawed product should be completely blocked. And any contamination of the product by the detected pest infestation should also be included in the action plan.
When decoy devices are missing, this observation should be recorded, assessed and investigated.

Pest control

Internal control
To prevent pests internally, several controls take place.

Entry control: During the entry control of our products, we check for possible pests. If vermin are present, the delivery is refused.

Hygiene control: During the various checks in the company we look for:

- The presence of feces and pests.
- Dirt accumulation.
- Possible hiding places due to improper storage.
- Technical state of the building and possible gaps to the outside.
- Corrective measures are taken when deviations are found.

Pest control

Hygiene

- Everything is kept clean.
- The grounds and building are well maintained to avoid hiding places.
- Litter is prevented.
- Waste containers are locked.
- Eating and drinking is only allowed in the designated areas. These areas are cleaned according to a fixed frequency.
- Company hygiene
- Products are not placed directly on the floor. There is also space between pallets and the wall so that inspection is possible.
- Stocks are inspected for the presence of pests.
- Various hygiene measures apply within the company.
- Wooden pallets are kept clean and dry.
- Plants are kept as short as possible and at least 60 cm from the wall.
- Pallets are kept 30 cm clear of the floor and 50 cm from the wall to allow proper inspection.

Cleaning and disinfection

Cleaning and disinfection

Cleaning and disinfection aim to prevent chemical and microbial contamination of foodstuffs through contact with contaminated surfaces. The consequences of poor cleaning and disinfection can be:

- Lower quality of food;
- Faster food spoilage;
- Greater risk of food poisoning.
- Cleaning also aims to improve the working environment for staff.

Cleaning and disinfection are two different concepts that are clearly related. Cleaning is the removal of skin and some of the micro-organisms. Disinfecting is treating surfaces in such a way that micro-organisms are killed or reduced to an acceptable level. First, proper cleaning must be done for the subsequent disinfection to be meaningful.

To prevent accumulation of, and cross-contamination with, dirt and microorganisms, proper cleaning and disinfection is very important. Most cleaning activities are outsourced to a specialized company to ensure proper cleaning and disinfection. Minor daily cleaning tasks are carried out by in-house staff.

Cleaning and disinfection

An agreement has been drawn up with the cleaning company, which includes our requirements. The cleaning company's employees must comply with our hygiene rules. From all employees of the external company are present:

- Health certificate;
- Signed hygiene regulations;
- Proof of qualification;
- Responsibilities.
- Of the cleaning and disinfecting agents used, the necessary specifications are present (MSDS and product data sheets with intended use, recommended dosage, pH, etc).

For cleaning, departments should be broom clean and machines dismantled.

Cleaning and disinfection

All production areas are cleaned and disinfected according to established cleaning schedules. These schedules are laid down in the specifications. The cleaning rules for process equipment, food contact surfaces and room cleaning within high care/risk areas must include at least:

- Responsible party;
- Item/area to be cleaned;
- Cleaning frequency;
- Method of cleaning, including disassembly of equipment on which cleaning activities are to be performed;
- Cleaning agents and concentrations;
- Cleaning materials;
- Cleaning capture and cleaning verification.
- Control Cleaning result
- Daily cleaning is visually checked before the start of operations.

If objects or areas are not clean, or have not been sufficiently rinsed, this should be cleaned again (before use in production). The deficiency is recorded. It is then checked whether the corrective action has been sufficiently implemented.

Practice questions

Practice questions

Food Safety

An example of a common food safety problem is Listeria in French Cheeses, name a common food safety problem in your company.

Food hazards

Name the 3 types of hazards mentioned in 'Food Safety for production'.

Microorganisms

Name another type of microbiological hazard besides moulds.

Chemical contamination

Name an example of a chemical hazard in your company.

Physical contamination

Name 3 examples of a physical hazard

HACCP and Controls

Hazards are safeguarded by other Critical Control Points, name an example of a CCP.

Hygiene regulations

- What dress code is required for the production site?
- Under what conditions (E.g. Jaundice), should you not enter the production site?

Allergen management

- Name 3 legal allergens according to the EU.
- What is possible management measures for securing allergens?

Food defense

What is Food defense?

Pest control

What is part of internal control for pest control?

Cleaning and disinfection

What must be present from all employees of the external company?

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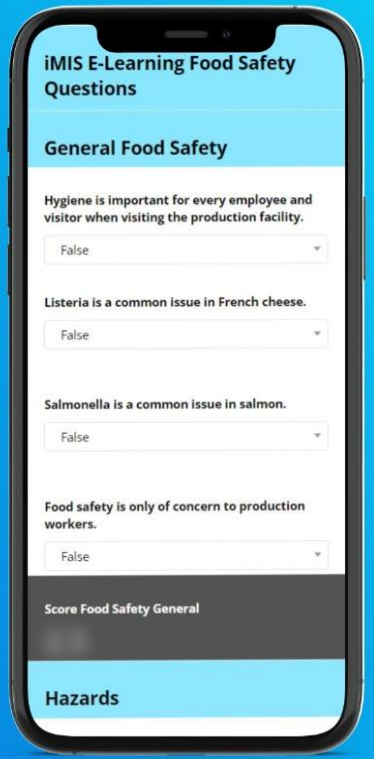

Thanks for using this presentation!

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