



Chemical hazards

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Hazard Analysis

Hazards can originate from environment, farming, processing.

- Chemical hazards
- Physical hazards
- Microbiological hazards



Chemical hazards

- Additives, enzymes and other ingredients
- Allergens
- Antibiotics, other veterinary medicines and biocides
- Pesticides
- Detergent and disinfectant residues
- Dioxins and PCBs
- Heavy metals
- Aflatoxin M1
- Various like migration from food contact materials, smoke, ...



Additives, enzymes and other ingredients





Additives, enzymes and other ingredients

Hazards:

- Use of additives and enzymes that are not authorised or use of inappropriate dose
- Use of contaminated ingredients

Preventive measures:

- Use only permitted additives and enzymes
- Buy from trusted suppliers
- Store at recommended conditions
- Prepare, measure out and dose correctly



Allergens



Image source: eufic.org



Allergens

Hazard:

- Presence of allergens may pose a significant risk to consumer health

Preventive measures:

- Evaluate ingredients for the presence of allergens
- Presence of allergenic ingredients, including milk, must be declared in line with EU 1169/2011
- Attention: sometimes the presence of an allergen in an ingredient or additive is not so obvious like lysozyme from egg



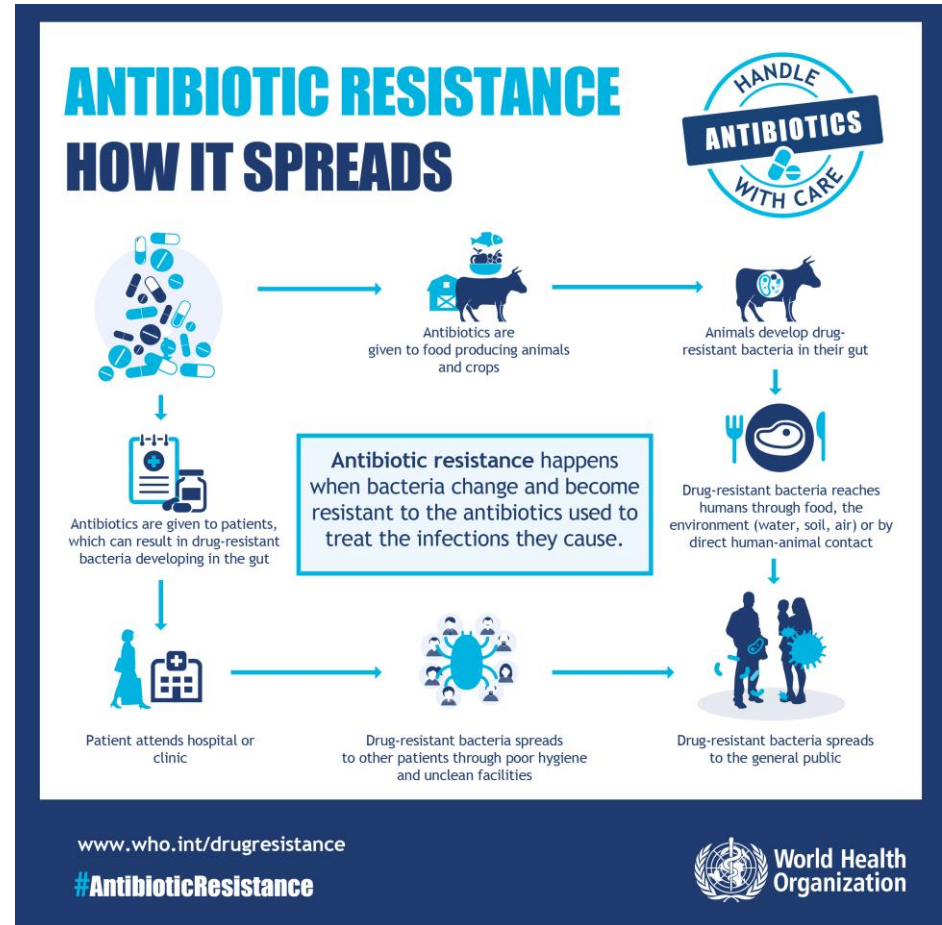
Antibiotics, other veterinary medicines and biocides



Image source: Delaval



Image source: dvm360.org





Antibiotics, other veterinary medicines and biocides

Hazards:

- Milk contaminated with residues from veterinary medicines, including antibiotics and parasite treatment can pose a risk to human health
- Antibiotics may inhibit growth of starter cultures

Preventive measures:

- Use authorised medicines, follow instructions for use carefully
- Milk treated animals separately and exclude this milk from the food chain



Pesticides



Image source: Jan Overesch



Pesticides

Hazard:

- Residues from pesticides contaminating feed or grazing land may contaminate milk supply and pose a risk to human health

Preventive measures:

Use pesticides according to manufacturer's instruction, observing the specified period between application and harvesting or grazing.



Detergent and disinfectant residues



Image source: www.In2Food.nl



Detergent and disinfectant residues

Hazard:

- Residues from detergents and disinfectants may pose a risk to human health or inhibit starter activity which may compromise the safety of the product

Preventive measures:

Use detergent and disinfectant according to manufacturer's instruction (purpose and dose). After cleaning and/or disinfection, rinse equipment with potable water, according to manufacturer's instruction.



Dioxins and polychlorinated biphenyls (PCBs)



Image source: Nationaal Archief /Rob Mierement/Anefo



Dioxins and polychlorinated biphenyls (PCBs)

Hazard:

- Dioxins and PCBs can be present as environmental contaminants due to industrial processes and uncontrolled incineration. They cause a health problems. They are persistent in the environment, fat soluble and become concentrated by the cheese and butter making process.

Preventive measures:

- Monitoring is carried out a national level.
- Avoid the unauthorised incineration of waste materials.
- Contaminated land should not be used for grazing or growing of feed crops.



Aflatoxin M1





Aflatoxin M1

Hazard:

- Some genera of moulds produce toxins such as Aflatoxin which have carcinogenic and nephrotoxic properties in humans.
- Aflatoxin B1 in fodder is excreted in milk as Aflatoxin M1.
- Aflatoxins are thermostable and water soluble.

Preventive measure:

- Good practises for harvesting and storage of feeds can help to maintain low levels of mycotoxins.



Miscellaneous hazards:



Image source: CRDOP San Simon da Costa



Miscellaneous

Hazard:

- Migration of chemicals from food contact materials

Preventive measure:

- Use approved food contact materials

For smoked products the smoking step must be considered in the hazard analysis.



Summary: chemical hazards

- Additives, enzymes and other ingredients
- **Allergens**
- **Antibiotics, other veterinary medicines and biocides**
- Pesticides
- Detergent and disinfectant residues
- Dioxins and PCBs
- Heavy metals
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Most significant for farmhouse and artisan cheese and dairy production