Chemical hazards
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
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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
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

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**Antibiotic Resistance**

**How it spreads**

- Antibiotics are given to food producing animals and crops.
- Animals develop drug-resistant bacteria in their gut.
- Drug-resistant bacteria reach humans through food, the environment, water, air, or by direct human-animal contact.
- Antibiotic resistance happens when bacteria change and become resistant to the antibiotics used to treat the infections they cause.
- Antibiotics are given to patients, which can result in drug-resistant bacteria developing in the gut.
- Drug-resistant bacteria spreads to other patients through poor hygiene and unclean facilities.
- Drug-resistant bacteria spreads to the general public.

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**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 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 at 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 practices 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

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Most significant for farmhouse and artisan cheese and dairy production