



Food safety aspects of food printing

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No special regulation for food printing, but

- **General food law** → Regulation (EC) n° 178/2002
- **Food hygiene** → Reg. (EC) n° 852/2004
- **Microbiological criteria** → Reg. (EC) n° 2073/2005
- **Contaminants** → Reg. (EC) n° 1881/2006
- **Pesticide residues** → Reg. (EC) 396/2005
- **Food additives** → Reg. (EC) 1333/2008
- **Flavouring** → Reg. (EC) 1334/2008
- **Food labelling** → Reg. (EU) n° 1169/2011
- **Food contact materials (FCM)** → Reg. (EC) n° 1935/2004
- **Plastic implementation measure** → Reg. (EU) n° 10/2011
- **GMP for FCM** → Reg. (EU) n° 2023/2006
- **Novel Food** → Regs. (EC) n° 258/97 & (EU) n° 2015/2283
- **GMO** → Regs. (EC) n° 1829/2003 & 1830/2003 ... **and more**



Why food printer operators should be interested in food safety:

Primary responsibility of food business operator to satisfy the requirements of food law



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→ Regulation (EC) n° 178/2002 (Article 17)

General hygiene requirements

- **Equipment requirements e.g. cleaning and disinfection**
 - **Food protection**
 - **Storing conditions**
 - **Hazard analysis and critical control points (HACCP)**
 - ...
- **Regulation (EC) n° 852/2004**

Hygiene requirements for food processing machinery are standardized in **CEN - EN 1672-2**



European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Biological, chemical or physical agent in, or condition of, food



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Microbiological hazards

Origin

- Raw material
- Inadequate heat treatment
- Storage temperature
- Food composition
- Recontamination
- Personal hygiene
- Cleaning and disinfection
- Biofilm formation

Microbiological criteria

- Risk for ready-to-eat (RTE) food to contain *Listeria monocytogenes* → Surface sampling for RTE-food producers
- Food safety criteria e.g. for
L. monocytogenes in RTE-food,
Salmonella in RTE-food containing raw eggs, histamine in fishery products

→ Regulation (EC) n° 2073/2005



Origin

- **Raw material** e.g. heavy metals, pesticides, mycotoxins, biogenic amines, marine or fresh water biotoxins, natural substances, industrial contaminants
- **Process contaminants** e. g. formation of acrylamide, furan
- **Residues of cleaning and disinfection** e. g. quaternary ammonium compounds, chlorate, perchlorate
- **Technical additives** e. g. lubricants, coolants
- **Migration from food contact materials** e. g. heavy metals, monomers, mineral oils



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Origin of foreign bodies

- **Raw material** e.g.
 - skimmed milk powder with fibers (PET)
 - ferromagnetic particles in flour
 - fine rope fibers in sugar
 - teeth in cocoa beverage powder
- **Animals** e.g. insects, rodents, small reptiles, amphibian
- **Production** e. g. pieces of glass, abrasion of metal, plastic or wood



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Origin

- Raw material
- Cross-contamination
- Formation of new allergens by processing?

Labelling

→ Regulation (EC) n° 1169/2011,
list in Annex II



Regulation (EC) n° 258/97 & (EU) n° 2015/2283

Novel: not in use before 15 May 1997 in EU

- **New or intentionally modified primary structure**
- **Food from microorganisms, fungi, algae, mineral origin, **plants, animals**, cell or tissue cultures**
- **Engineered nanomaterial**
- **Vitamins, minerals, other substances**
- **New production process which gives rise to **significant changes in the composition or structure of a food**, affecting its nutritional value, metabolism or level of undesirable substances**



<http://memory-alpha.wikia.com/wiki/Replicator>

Thank you for your attention!

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