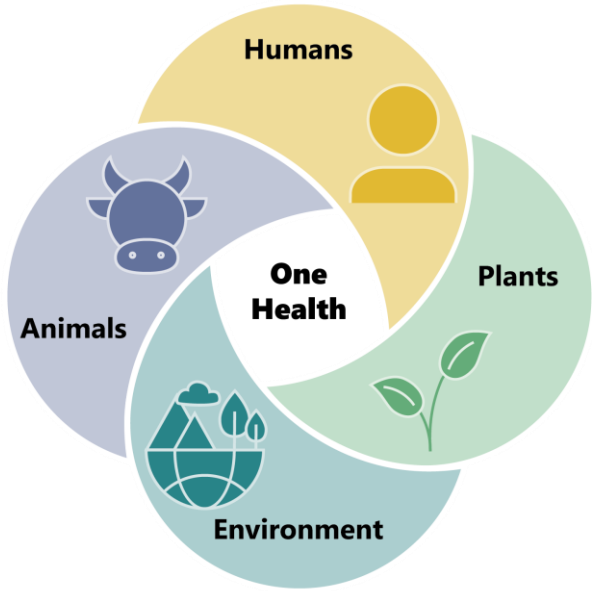
Safety assessment of recycled paper and cardboard FCM

EFSA FCM Network, 12th Meeting 21.-23.10.2025



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1. Hazard identification
2. Risk evaluation
Safety assessment
4. Risk management
3. Standard comparison

1. Hazard identification

Sources of harm (1): the paper making process

- Repulping
  Removal of contraries based on physio-chemical properties to cellulosic fibres (size, density, surface properties)
- De-inking by flotation (in case of recovered cellulose)
- Bleaching process (e.g. oxygen, hydrogen peroxide, ozone)
- Process chemicals (IAS):
  slimicides, biocides, wet strength agents (chloropropanols), fluorescent whiteners

No substance selective decontamination process available

1. Hazard identification

Sources of harm (2): contaminants (NIAS) derived from input materials

Recovered fibres from food and non-food grade paper and board of "suitable quality" (sorted material according EN 643:2014) may include (not exhaustive):

Printing inks and their degradation products:
organic colourants (PAA, PAH)
anorganic pigments and impurities (heavy metals: Pb, Cd, As, Cr, Co, Ni, Sb..)
polymers/ binder (resins, micro-plastic particles)
solvents/ oils (MOAH, MOSH, DIPNs)

Adhesives and their degradation products:
Bisphenols, phthalates, solvents (MOAH and MOSH)

Coatings and their degradation products:
(micro)plastic particles, PFAS, silicons, epoxy resins
photoinitators (benzophenons, isopropylthioxanthone ITX)

Microbiological contamination

2. Risk evaluation

Severity of harm from identified hazards

Analysing the likelihood and severity of harm from identified hazards

Severity of harm:

Depends on hazard of substance(s),
Quantity of substance(s) transferred to food

Likelihood of harm:

Consumption and exposure

Case by case assessment

2. Risk evaluation

Analysing the likelihood of harm from identified hazards

Likelihood/ exposure depends on:

Type of use:

direct contact (filter paper, cooking/ baking paper)

indirect contact with food (secondary or tertiary packaging, functional barrier-systems)

Conditions of use:

temperature (freezing, room temp., cooking, baking/microwave)

contact time (fast food packaging, long time storage)

Type of food:

dry (salt, sugar), fatty/liquid (coffee mug, trays for convenience food)

Consumption data related to FCM: lacking

3. Standard comparison

Comparing the identified risk levels against established science-based safety standards (1)

European Legislation:

Reg. (EC) 1935/2004

Reg. (EU) 2023/2006 (specification of input material, process control, end control, documentation, traceability)

But:

no specific rules or limits for the paper recycling process and the safe use in food contact!

3. Standard comparison

Comparing the identified risk levels against established science-based safety standards (2)

European Guidelines:

CoE/ EDQM (including barrier effectiveness test methods), JRC

National regulations or guidelines (not exhaustive):

DE: BfR, FR: Matériaux-au-contact-des-denrees-alimentaires, NL: Warenwetregeling verpakkingen, IT: Decreto ministeriale, CH: Swiss Ordinance on Materials and Articles in Contact with Food, AT: Verwendung von Recyclingkarton zur Lebensmittelverpackung BMG-75210/0018-II/B/13/2012 vom 21.12.2012 …

3. Standard comparison

Comparing the identified risk levels against established science-based safety standards (3)

European industry guidelines and standards:

CEPI, EuPIA, ISO, DIN, EN

EN 643:2014 Prohibited materials:
any materials which represent a hazard for health, safety and environment, such as medical waste, contaminated products of personal hygiene, hazardous waste, organic waste including foodstuffs, bitumen, toxic powders and similar

4. Risk management

Implementing measures to reduce unacceptable risks to an acceptable level

GMP needs:

- specification of input material
- process control
- end control

Main problem:

- Inhomogeneous batches are difficult to sample
- lots of unknown contaminants

4. Risk management

Risk communication

Supporting documentation (see also CoE Guide Supporting documentation) and Declaration of compliance (see CoE Guide Paper and Board):

- information on the type of material, such as fresh and/or recycled material, in all layers;
- adequate information on recycled paper or board material (e.g. percentage in mixture with fresh fibres; quality of the recycled material; cleaning process);
- measures taken to render the material or article compliant with Resolution CM/Res (2020) 9 and this Technical Guide, such as specification of functional barrier or functional adsorbent;
- for recycled paper and board with a functional barrier applied to the food contact surface: storage conditions for the material or article, (e.g. related to functional barrier effectiveness or set-off), duration of the useful shelf life, taking into account the period before being in food contact, and requirements on closure design;
- for recycled paper and board incorporating functional adsorbents: data on the effectiveness, restrictions on printing and food types for which the functional adsorbent has sufficient sorption capacity.

4. Risk management

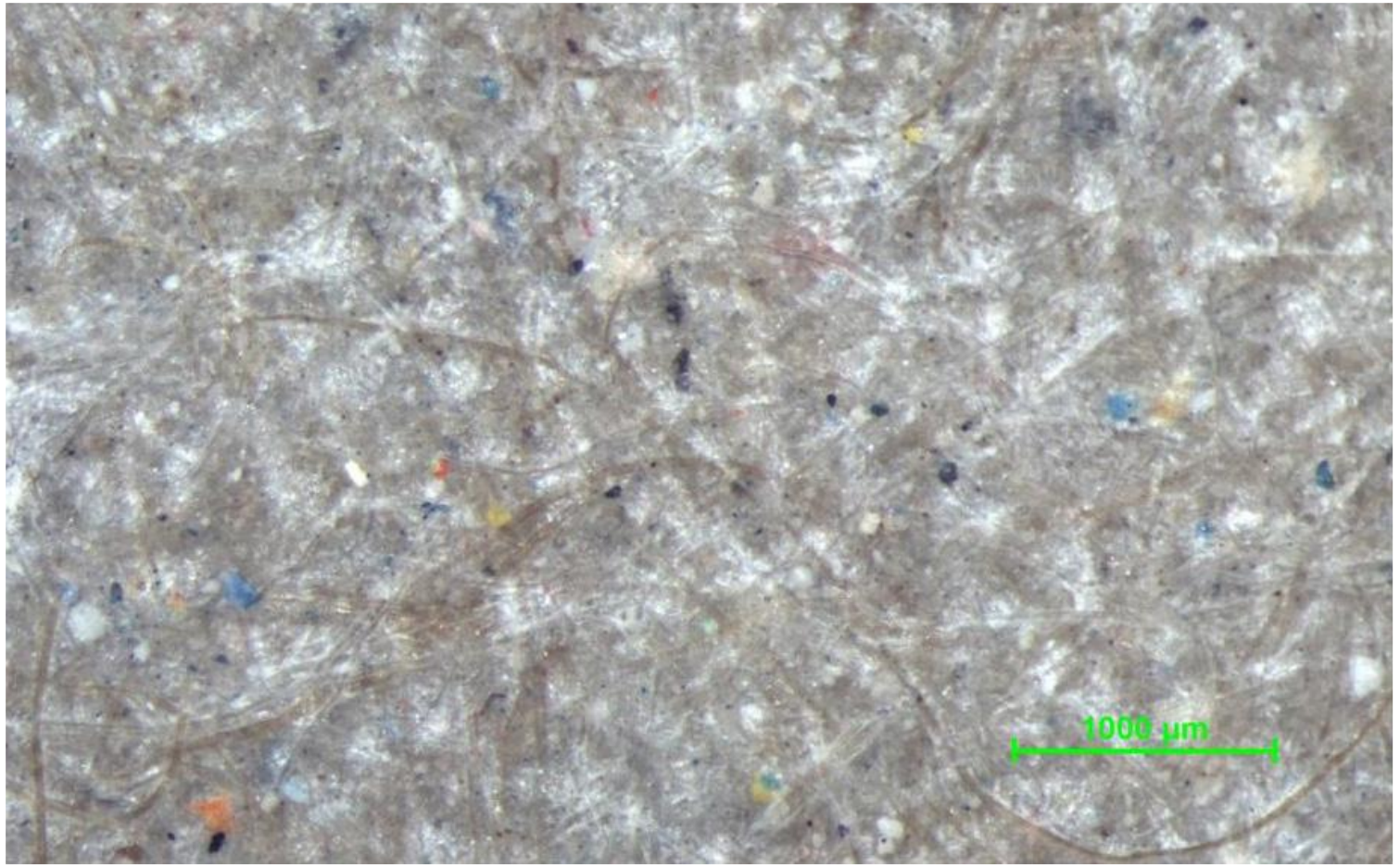
My personal wish-list:

- EU Regulation for paper and board materials and articles
- EU Regulation for recycled paper and board materials and articles

Including labelling and instructions for safe use

Recycled cardboard sample for food contact use

Light microscope photo (AGES)



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