Test strategy of paper and board food contact materials

Gitte Alsing Pedersen
DTU National Food Institute
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Danish recommendation on fluorinated substances in P & B

Gitte Alsing Pedersen
Technical University of Denmark
National Food Institute
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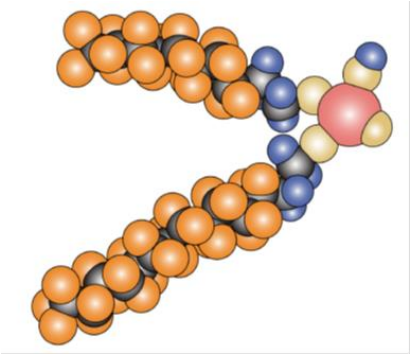
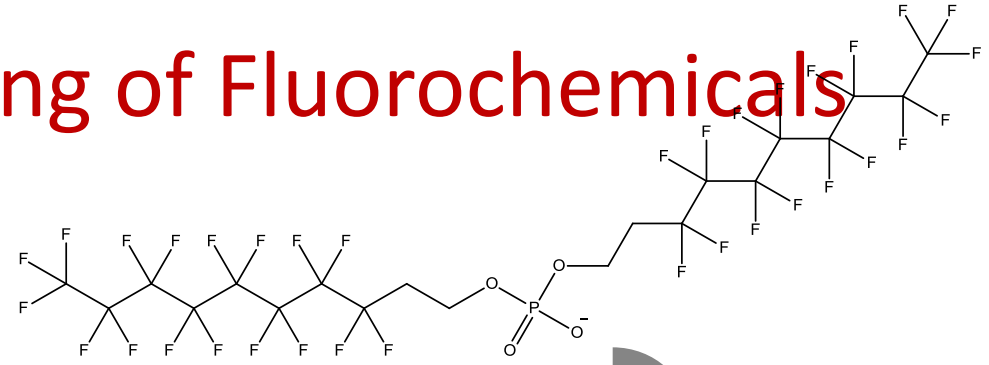
Characterization and hazard of per- and polyfluorinated substances, PFAS

- Persistent chemicals
- Many are Bioacumulating
- Suspected Carcinogenic, Immunotoxic and Endocrine Disrupters

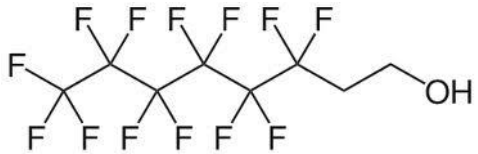


In vitro testing of Fluorochemicals

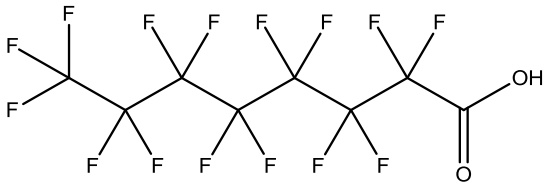
4 PAPs



3 FTOHs



9 PFCAs

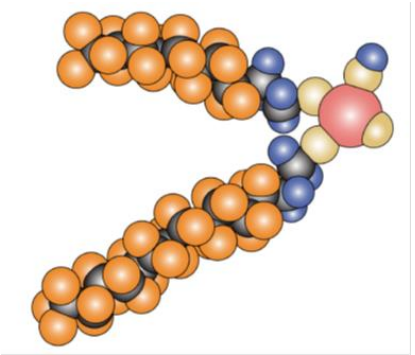


3 Technical mixtures

In vitro testing showed endocrine effects of fluorochemicals by different mechanisms of action.

Rosenmai A. et al, Fluorochemicals used in food packaging inhibit male sex hormone synthesis. Toxocology and Applied Pharmacology, 266 (2013) 132-142.

Use of PFAS



- Water and fat repellent substances
- Treatment of paper and board FCM
  - Cookie sheets, food paper, fast food packaging, popcorn bags etc.

Danish surveys of PFAS in P&B specific analysis

- 2009:

- PFAS in 60 % of sample extracts of P&B

- 2011:

- PFAS in 45 % of sample extracts of P&B

- 2013:

-PFAS in 4 % of sample extracts of P&B

Analysis of specific PFAS with LC-MS/MS and QTOF-MS

The reduced number of positive samples may be due to substitutions from old to new substances (the latter not included in the analytical method)

Requirements in Denmark

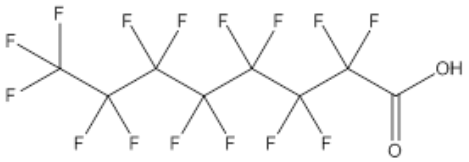
- Article 3 in EU no 1935/2004
- Declaration of compliance (DoC) for all FCM (also P+B)

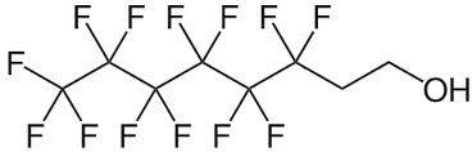
In support of Article 3 (since August 2015):

- Recommended limit of 0.35 µg fluorine/dm^2 paper (total organic fluorine)

Aim:

- To restrict intentional use of fluorine in P&B





On-going work on fluorinated substances in paper and board

- Evaluation of analytical method(s) for enforcement of Danish restriction/recommendation

- Mapping the level of potential contamination (NIAS) of P&B with fluorinated substances.

Thank you

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