FACET Project Update

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representing CEPE & FIG (FACET Industry Group)
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- FACET = Flavourings, Additives (food), Contact materials, Exposure Task
- Framework 7 programme - Theme 2 Food, Agriculture and Fisheries, and Biotechnology, KBBE-211686
- EU funded project ~ €5.8 Mio.
- 4 year project finished 31st August 2012
- 10 work packages and 20 partners
- 7 work packages involve packaging
- Packaging industry represented by FIG (FACET Industry Group) – partner 4
FACET contains:

- Migration model module for multi-layer and multi-layer, multi-material food packaging
- QSAR tool to estimate hazard of food contact substances using web link to OECD toolbox
- Exposure assessment module

Free and freely available PC-delivered software (on DVDs) for estimating exposure to migrants from food packaging as well as food additives and flavours
Where are we with FACET?

- Due to the complexity of the tasks and complex and large databases, the software has only recently been released to a limited number of people to Beta test.

- Therefore, the FACET model is not yet verified for estimating exposure to migrants from food packaging materials, despite the intention a year ago to present worked examples for this symposium!

- Instead an outline of what was achieved by the packaging industry and its partners will be given.
FIG consists of 12 European trade associations

- Packaging materials covered:
  - paper and board
  - plastics – rigid and flexible
  - metal – rigid and flexible
  - inks, waxes and adhesives

- FIG contributed €0.5M in cash and €2M in kind.
- FACET covers all retail packaging including some vending and take-aways (packed at the point of sale)
Allocate FOOD CATEGORY

DIARIES
Food item eaten

Chemical present or not?

CONCENTRATION of substance

What was food packed in? MATERIALS Classification of materials (n=207), then layer-by-layer structures, then for 24 countries

FCS Substance database n=6475

What SUBSTANCE(S) does each material / layer contain and at what concentration? (Cp0) OCCURRENCE

Direct input in some cases – e.g. survey or simulant data

What are the CONDITIONS OF USE that influence migration t /T / SA:M ratio

WP 4.1 ACTIVITIES

WP 4.2 MIGRATION MODELLING
Establish thermodynamic (solubility) and kinetic (diffusion) parameters for classification of food item with respect to migration behavior. Cluster materials into those with similar characteristics.

What are the conditions of use that influence migration?

Substances: Physico-chemical parameters

Verified migration model for multi-layers and multi-materials inc. set-off

Verified migration model for plastics and non-plastics

Migration modelling for concentration into the food item.

Materials description

Concentration in materials ($Cp_0$) values

Food category

Use in exposure model

WP 4.2 Activities
Software input options

- User brings own migration data
- The pre-loaded compositional information is used to calculate migration levels for the existing materials and structures and t/T conditions etc in the databases.
- The user can enter a new or an existing substance and link it with new or existing packaging applications (materials, structures, foods).
4.1 Packaging composition and usage
What is food packed in, what chemical substances are present and what are the contact conditions (t/T/SA:M) that sets the migration level

4.2 Migration modelling
To be covered in next presentation, but unlike compliance testing, realistic migration modelling was the challenge.

4.3 (Quantitative) Structure Activity Relationships
Hazard identification based on the molecular structure of the chemical
WP 4.1

Packaging usage and substance occurrence data
- 6475 substances for all FCMs (Food Contact Materials) with CAS no., MW, log Pow, SMILES code, dual-use flag, etc
- Decernis have ‘sense checked’ the list as they did for EFSA/ESCO.
- FACET database links (not a hyperlink) with the new DG-SANCO database covering EU-regulated FC-substances
As the objective for packaging was to cover all substances, then migration modelling was the only practical solution.

BUT only ~674 substances have sufficient data which can be used in the FACET migration module, as preloaded data!

All others will require user entered parameters.
207 material codes plus 224 ink related codes (i.e. inks for different substrates and printing processes)

Compositional information provided on all these materials - occurrence (substances used yes/no, market shares, concentrations in the material e.g. min, max, typical)

Can coatings – extraction data used in place of Cpo and migration modelling
These materials are then combined layer-by-layer to make packaging **structures** (up to 7 layers in the migration model) with layer order and thickness - F / M1 / M2 / M3 / etc.

Substances used in each material, their concentrations in each material, combinations of materials to make packaging structures and the market shares for all of these are proprietary.

Therefore all databases are encrypted.
EuroMonitor (EM) data for 4 EU Countries was used as basis for allocating packaging to foodstuffs – types, sizes, S/V ratios, market split on SKU (Stock Units) in MATRIX Project.

FIG purchased data to cover an additional 20 EU Countries to give EU wide data

EM data linked with food item descriptions - 18 food packaging categories with common tier 0 and then lower tiers of 56 and 172 categories

Material codes linked to EM data

Cannot differentiate between size of pack of foodstuff consumed – normally packaging not described at all!
Sustainability and Acceptability of FACET after 2012
Acceptability & Sustainability of FACET - 1

- Two issues
  - Acceptability
  - Sustainability – after August 2012
- Acceptability – EFSA, Authorities & Regulators, Commission, Food industry & packaging industry **MUST ALL** accept FACET as the tool for risk assessment / management
- Sustainability – who maintains the software, how are the databases updated, how is (are) a new country food consumption survey(s) added & most importantly who will pay?
An acceptability and sustainability steering team has been formed

JRC taking the lead with chair FDE, ETP

We need to begin a dialogue with all interested stakeholders on the future funding of FACET for:

- Updating software
- Updating and adding food consumption (nutritional) surveys
- Future data collections
- Updating packaging data to reflect changes in the market place
The TTC (Threshold of Toxicological Concern) concepts coupled with the advances in estimating migration and exposure that FACET will bring, will be significant developments in our capabilities to make better scientifically-based risk assessment of migration from FCMs.

For an overview of the FACET project consult the September (2011) publication:
In the paper to be published following this presentation, the use of the data behind the FACET model will be used to estimate exposure. A combination of a deterministic and stochastic approach is used.

- Only foodstuffs which could be packaged in rigid light metal packaging
- UK consumption mean and 95\textsuperscript{th} percentile from diaries (NDNS 19-64 year olds; 2000)
- UK packaging data from Euromonitor
- NIAS migrating at 5 mg/kg
THANK YOU FOR YOUR ATTENTION

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FACET WEB SITE

www.ucd.ie/facet
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