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Food Producer Challenges to Eliminate Chemicals of Concern in Food Packaging

Food Packaging Forum Workshop

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Outline

- Identifying chemical of concern
- Identifying suitable alternatives
- Qualification of alternatives

Identifying Chemicals of Concern

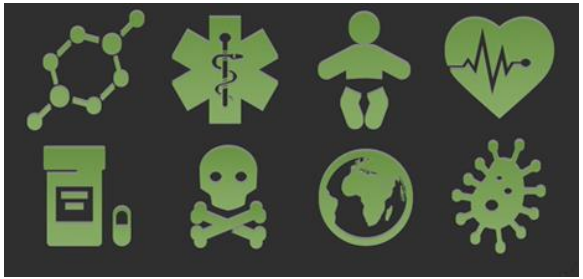
How do you determine what is a chemical of concern to then eliminate it from food packaging?

Three areas to evaluate:

Toxicological / food safety studies

Regulations from around the globe

Public concern



Determine if suitable alternatives exist

Are the alternatives…

- available from packaging suppliers?
- allowed by regulations?
- safe?
- work the same as the original?

Suitable alternatives – Substitution– How long?

How **long** does substitution take?

Is there a suitable alternative available?

- Supplier has already or develops new (0-3+ years)

Is the alternative allowed by regulation?

- Regulatory compliance approvals (2+ years)

Suitable alternatives – Substitution – How long?

At the food producer level:

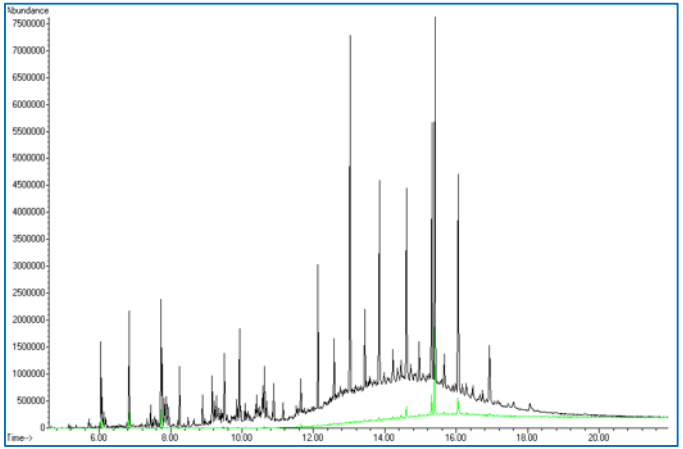
- Evaluation of the new packaging material:
  - Confirm regulatory status (CoC/DoC)
  - Conduct safety evaluation
  - Production evaluation
  - Shelf-life study

Suitable alternatives – Substitution – How long?

At the food producer level:

Safety Evaluation

- Migration analyses: 10 days (minimum) at elevated temps
- Analysis by GC or LC
  - Review of data
- Review/Identification of NIAS
  - Evaluation by toxicologists
- These steps can total 6+ months



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Suitable alternatives – Substitution – How long?

At the food producer level:

Production evaluation

- Production/filling trials with the new packaging structure
  - 6 months+
- Shelf-life Quality checks – up to 2 years

Suitable alternatives – Substitution – How long?

At the food producer level:

With all the steps:

Selection, Regulatory, Safety, Production, Shelf-life

- Qualified alternative(s) in 1-5 years
- **If** no problems along the way

Suitable alternatives: Example 1

Replacement of ITX photoinitiator in inks:

- Alternatives were known
  - Regulatory compliance (CoC/DoC)
  - Conduct safety evaluation (migration/set-off)
  - Production evaluation (scratch resistance, line-speed)
  - Shelf-life study (organoleptic)
  - Finished in <1 year

Suitable alternatives: Example 2

Replacement for BPA in can coatings:

Key difference: alternatives **not widely used/known**

- Regulatory compliance
  - More than review of DoC/CoC
  - Alternatives based on: polyester, acrylic, PVC, oleo resin
  - Develop new materials (3+ years) to fill performance gaps
    - then regulatory approval takes 2+ years

Suitable alternatives: Example 2
Replacement for BPA in can coatings:

Conduct safety evaluation on new materials

- Migration analyses,
- Tox assessment of NIAS
- 6+ months to 1 year

Suitable alternatives: Example 2:
Replacement for BPA in can coatings

Production Trials

- Obtain cans with new coating
- Fill with product on the production line
- Multiple coating formulations can be done in parallel
- Shelf-life is 2 years to complete

Suitable alternatives: Example 2:
Replacement for BPA in can coatings

Challenges:

- Learning curve with new technology
- Coatings were not guaranteed for previous/full shelf-life
  - Shorter shelf-life = more food waste
- Failures of coating:
  - Sensory
  - Coating performance
  - Production performance

Suitable alternatives: Example 2:
Replacement for BPA in can coatings

Challenges:

Performance failure – pitting, discoloration, corrosion

After 4 months

After 4 months

After 9 months

Suitable alternatives: Example 2:
Replacement for BPA in can coatings

Challenges:

Performance failure – adhesion loss

Suitable alternatives: Example 2:
Replacement for BPA in can coatings

With a failure during shelf-life, possible to lose 1+ year

Harvest pack (fruits/vegetables) there is a time window (once per year) to pack

- If a problem, longer delays to restart than non-seasonal packed food (e.g. soups or milk)

With a failure,

Reset pack and shelf-life time lines

Summary - Challenges to eliminate chemicals of concern in food packaging

- Identification of alternatives can be straight forward
- Challenges to ensure the **safety and compliance** of alternatives to chemicals of concern
- Challenges to ensure that an alternative **performs** the same – for shelf-life **and** for production

- Substitution is a **long** process

QUESTIONS?

Thank you for your attention.