PRINTING TECHNOLOGY & INNOVATION DAYS FOR FLEXIBLE PACKAGING

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Kuala Lumpur, Malaysia
INK SAFETY BEYOND LEGAL REQUIREMENTS AS PART OF SUSTAINABLE PACKAGING

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Food packaging safety – a must have
Concerns for Toluene as solvent
Safe raw materials and safe products are an essential prerequisite for recycling and circularity.

Siegwerk develops packaging inks that are safe for consumers and minimize environmental impacts. This applies in particular to NPH packaging applications (Nutrition, Pharma, Hygiene) and Tobacco packaging.

All raw materials used are non-(acute) toxic/not known CMRs* and meet Siegwerk’s stringent commitments/internal standards, which go beyond legal requirements.

We stand by our customers with advice and assistance.

*CMR = Carcinogenic, Mutagenic, Reprotoxic
Safety measures beyond legal compliance
Topics which need to be considered:

I. Reg. compliance
   - Food safety scandals in the past triggered increasingly tight regulation across regions

II. Consumer safety
   - Migration issues have been overseen several times
   - Risks associated with ink and packaging to be evaluated

III. Perceived safety
   - Distribution of information via social media worldwide
   - Any issue in the context gets public immediately
Be aware of brand damage

Citation from Stephen Klump—Global Head of Food Contact Material Safety & Compliance of Nestlé

"It takes years to build trust and fidelity in brands and products."

"It takes seconds to destroy that trust."
Special attention to sensitive applications
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Special attention to sensitive applications
Special attention to substances of concern
Agenda

- Food packaging safety – a must have
- Concerns for Toluene as solvent
Use of Toluene in Packaging Gravure Printing

- Predominantly used in Asia for this printing technology
  - Predominantly excellent solving properties
  - Easily available
  - Cheap
- Concentration of Toluene can be up to 40% in inks
- Toluene drift is getting stronger as more global brand owners are asking about it
- Implementation of Toluene free inks is slowing due to unawareness and cost reason
Toluene – Health Risks

Skin irritation / Dermatitis

Suspected of damaging the unborn child
Toluene – Ototoxicity

Imbalance

Hardness of hearing / Anacusia

Intensified by industrial noise!
Toluene – toxicological effects

- Breathing difficulties
- Eye and throat problems
- Skin irritation / dermatitis
- Neurotoxicity (dizziness, hallucinations, memory loss, confusion)
- Ototoxicity
- Reprotoxicity
- Ecotoxicity (air pollution via photochemical smog)
  - Photochemical smog is the formation of reactive compounds (e.g. ozone) by the action of sunlight on VOCs and nitrous oxides ($\text{NO}_x$)
  - Photochemical Ozone Creation Potential (POCP) is an indicator of the ability of a VOC to contribute to photochemical ozone formation
  - Toluene has a higher POCP compared to alternative solvents
Residual Toluene from packaging has an impact on organoleptic properties of food (odor, taste)

- Odor threshold varies: 0.5 – 100 mg/m$^3$ (130 ppb – 26 ppm) depending on the source
  - WHO (2000): 1 mg/m$^3$ (260 ppb)
  - Low compared to alternative solvents
Example Malaysia – Packaging Analysis

- Acetone: 0.03 mg/m²
- Ethyl Acetate: 0.07 mg/m²
- Methyl Ethyl Ketone: 0.02 mg/m²
Example Malaysia – Food Analysis (noodle snack)

- Toluene: 0.87 mg/kg (870 ppb)
- 0.25 mg/kg
Toluene in Printing Inks – Regulatory Bans

EU 10/2011 Plastic Implementation Measure (PIM)
Not listed

California Proposition 65

China GB 9685
Not listed

India IS 15495
Ban under preparation
Brand Owner Views – Requirements

**Toluene**

Not accepted by big brand owners who act on a global basis as solvent for printing inks for food packaging.

Examples:
- Nestlé
- Perfetti van Melle
- Mars/Wrigley
- Philip Morris

Toluene is explicitly banned for food packaging inks by the
- “Nestlé Guidance Note on Packaging Inks”
- “Perfetti van Melle Guideline printed & coated packaging materials”
Siegwerk offers solutions

- **Non-Toluene (NT) Inks**
  - Alternative solvents: Ethanol/Alcohols, Ethyl Acetate/Esters

- **Migration optimized safe inks for sensitive applications**
  - Thorough selection and evaluation of raw materials

- **Proactive transparency and shared responsibility**
  - Communication of migrants down the packaging chain via Statements of Composition
  - Basis for compliance assessments along the packaging supply chain
We guide you to efficient & safe performance

INK, HEART & SOUL

GUIDANCE & SUPPORT

FOCUS ON YOUR NEEDS

INK PERFORMANCE

PRODUCT SAFETY
THANK YOU FOR YOUR ATTENTION.