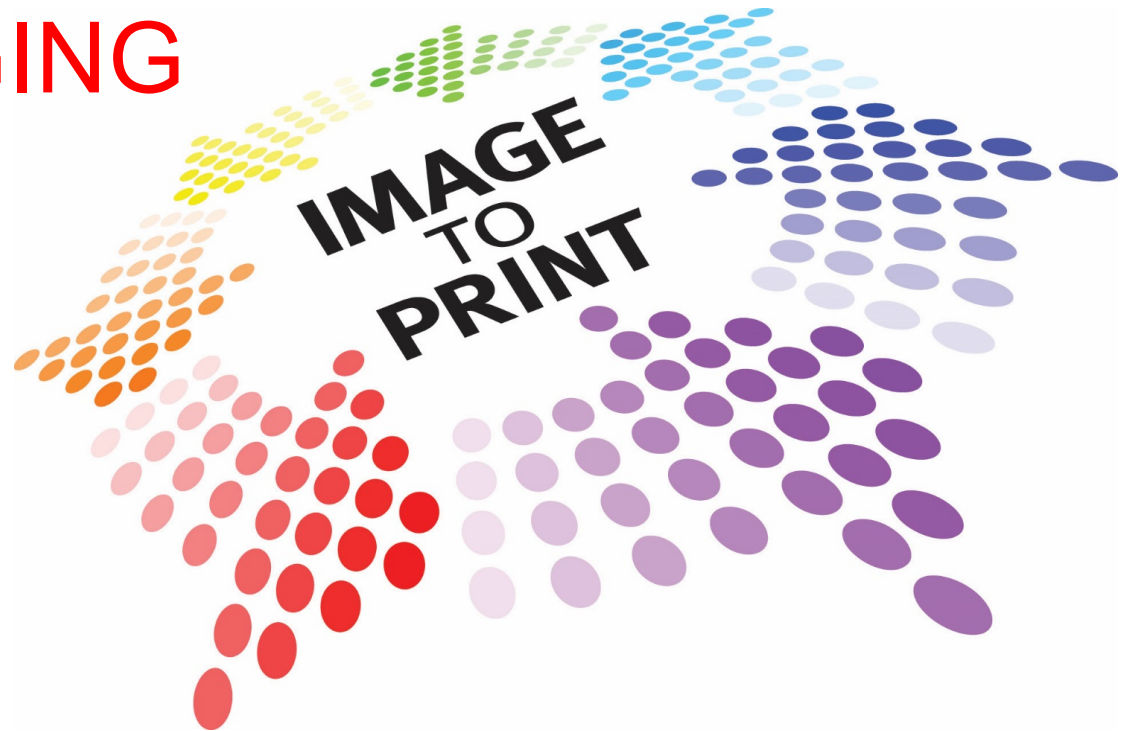


PRINTING TECHNOLOGY & INNOVATION DAYS FOR FLEXIBLE PACKAGING

20 / 21 November 2019
Kuala Lumpur, Malaysia



PRINTING TECHNOLOGY & INNOVATION
DAYS FOR FLEXIBLE PACKAGING

INK SAFETY BEYOND LEGAL REQUIREMENTS AS PART OF SUSTAINABLE PACKAGING

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Siegwerk



Agenda



- 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



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



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.

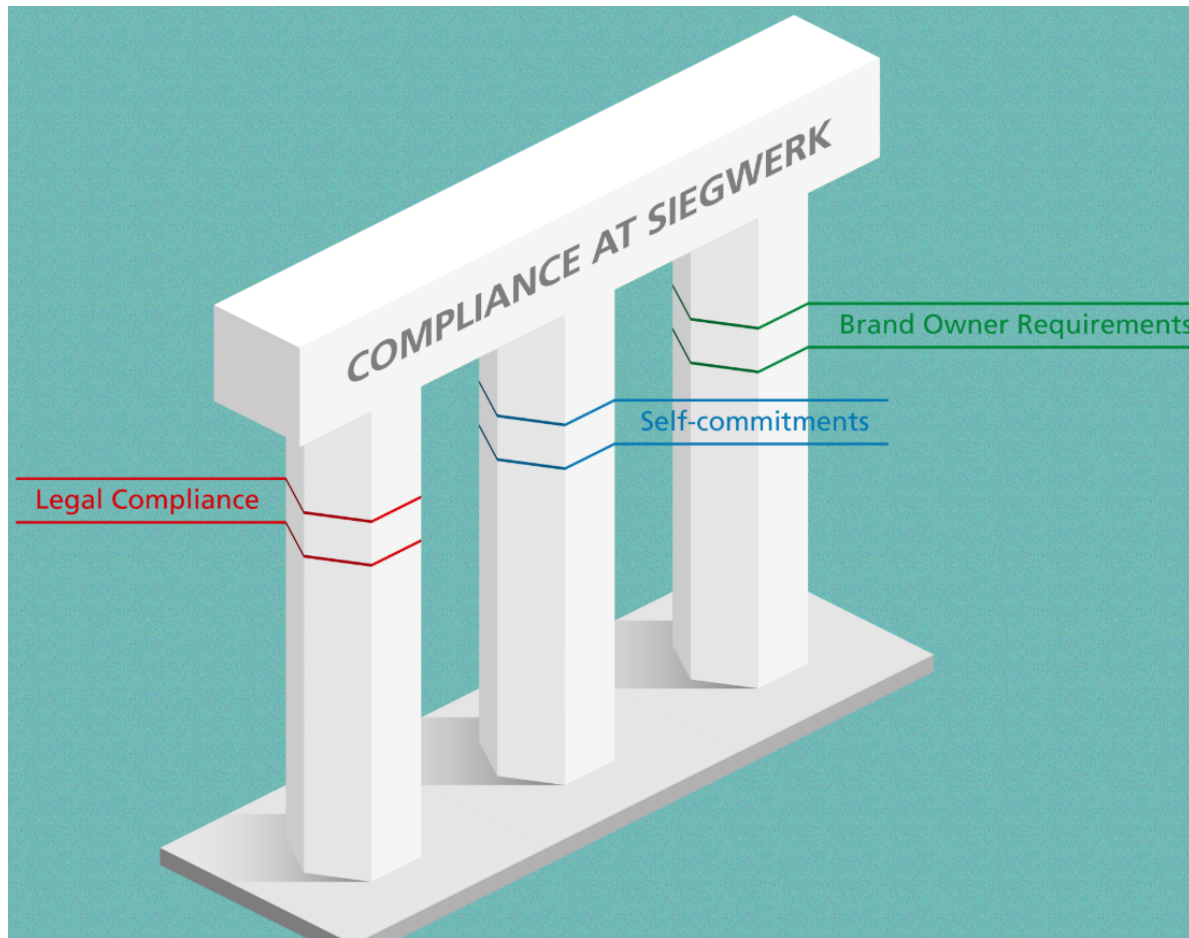


We stand by our customers with advice and assistance.

*CMR = Carcinogenic, Mutagenic, Reprotoxic



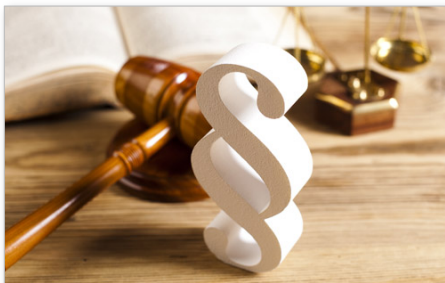
Safety measures beyond legal compliance



Topics which need to be considered....

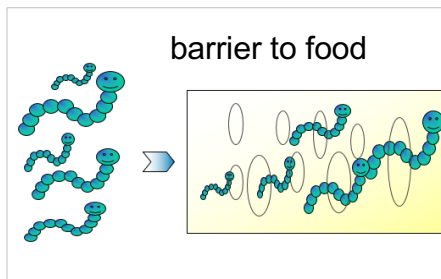
I. Reg. compliance

- 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



Special attention to sensitive applications



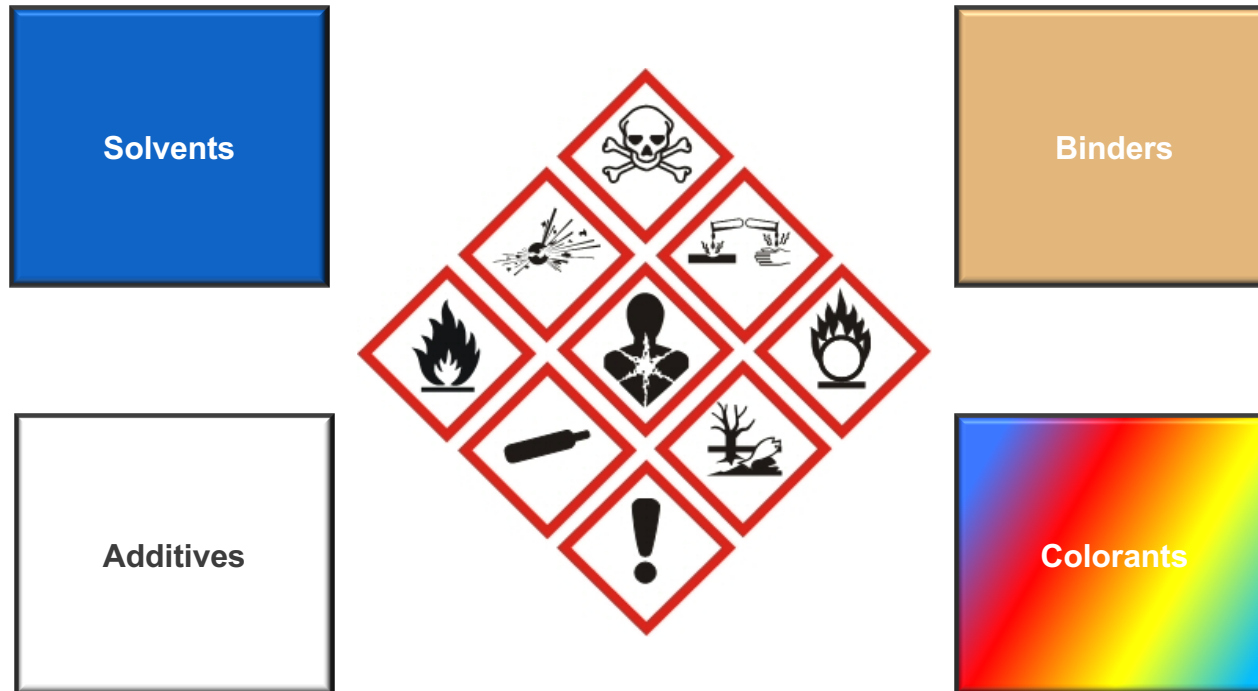
Special attention to sensitive applications



Special attention to sensitive applications



Special attention to substances of concern



Agenda



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- 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 (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

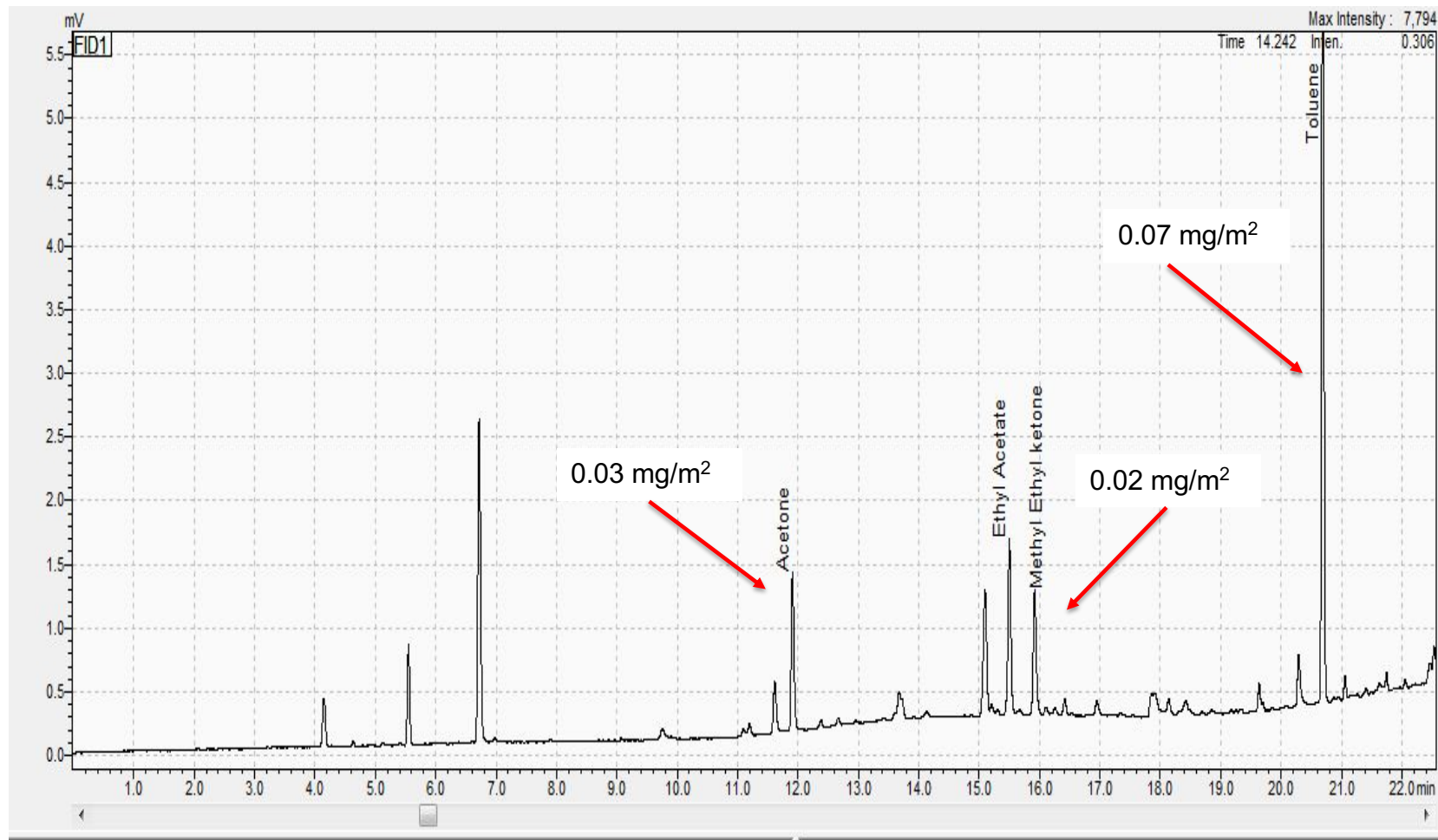


Toluene – Organoleptic Properties

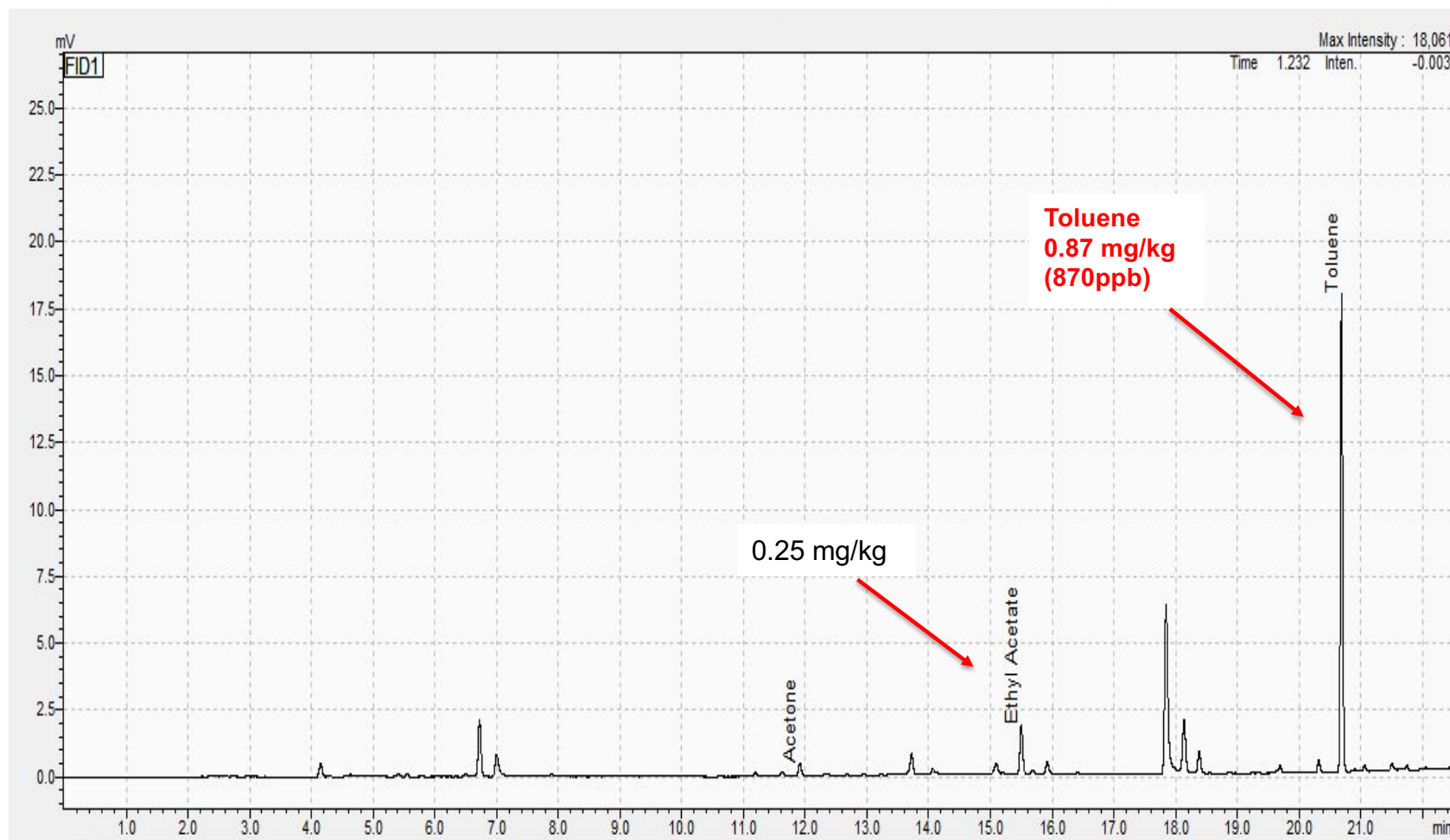
- Residual Toluene from packaging has an impact on organoleptic properties of food (odor, taste)
- Odor threshold varies: 0.5 – 100 mg/m³ (130 ppb – 26 ppm) depending on the source
 - WHO (2000): 1 mg/m³ (260 ppb)
 - Low compared to alternative solvents



Example Malaysia – Packaging Analysis



Example Malaysia – Food Analysis (noodle snack)



Toluene in Printing Inks – Regulatory Bans



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



China GB 9685
Not listed



California
Proposition 65



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”



MARS | WRIGLEY



Siegwerk offers solutions



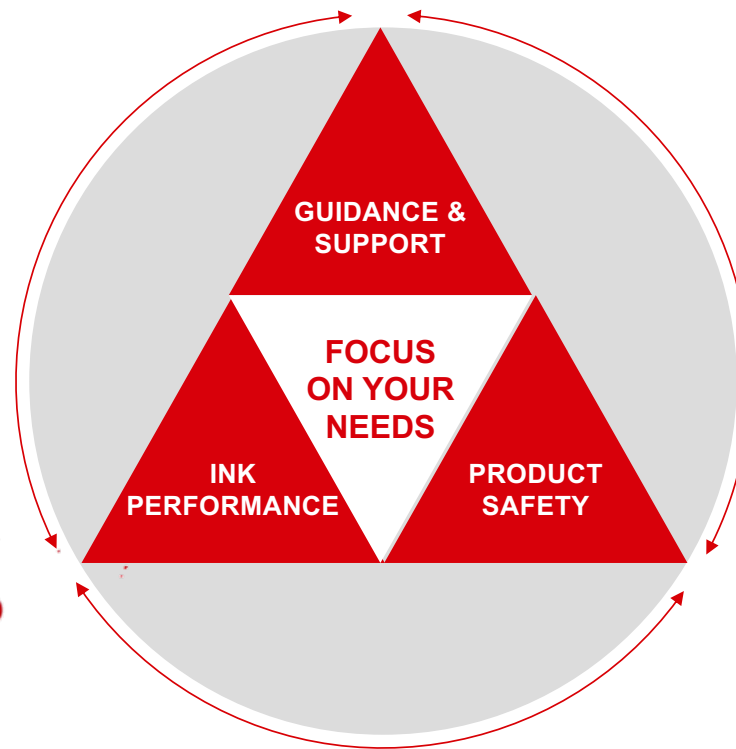
- **Non-Toluene (NT) Inks**
 - Alternative solvents: Ethanol/Alcohols, Ethyl Acetate/Esters
- **Migration optimized safe inks for sensitive applications**
 - Thorough selection and evaluation of raw materials
- **Proactive transparency and shared responsibility**
 - Communication of migrants down the 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



THANK YOU FOR YOUR ATTENTION.

janoschka

