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HCPP event – Sept 2019

REPLACING PHTHALATES

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WHY AND HOW

CHEMSEC – THE SHORT STORY



chemsec
MARKETPLACE

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SIN LIST

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SINIMILARITY

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SIN PRODUCERS

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TEXTILE GUIDE

PHTHALATES

- Widely used
- Many has been confirmed to be health hazards
- Regulation lagging behind
- Alternatives available



PHTHALATES AND PLASTICS

- Plasticizers
- They are everywhere
- Packaging and food



PHTHALATES AND REGULATION

- Substance by substance
- Several have been regulated
- Inconsistent regulation



PHTHALATES AND ALTERNATIVES

- Regrettable substitution
- How to proceed?
- Substitution requires alternatives





ALTERNATIVES: FUNCTION

- Understanding function
- Replacement strategy
 - Necessity
 - Drop-in
 - New material

ALTERNATIVES: ASSESSMENT

- Replace function – not chemical
- Assess hazard profile
 - GreenScreen benchmarks
 - Chemicals lists



ALTERNATIVES: AVAILABILITY

- Wide range of available alternatives

Alternative name	CAS #
bis(2-ethylhexyl) adipate (DEHA)	103-23-1
acetyl tri-butyl citrate (ATBC)	77-90-7
diisononyl adipate (DINA)	33703-08-1
di-(2-ethylhexyl) terephthalate (DEHT)	6422-86-2
epoxidised soya bean oil (ESBO)	8013-07-08
diisononyl cyclohexanedicarboxylate (DINCH)	166412-78-8 / 474919-59-0
2-ethyl-1-hexanol	104-76-7
dimethyl phthalate (DMP)	131-11-3
white mineral oil	8042-47-5
tris(2-ethylhexyl) trimellitate (TEHTM, TOTM)	3319-31-1
bis(2-propylheptyl) phthalate (DPHP)	53306-54-0
oxydipropyl dibenzoate	27138-31-4
diisooctyl adipate	1330-86-5
pentaerythritol tetravalerate	15834-04-5
alkylsulphonic phenyl ester	91082-17-6

ALTERNATIVES: DEHT/DOTP and DINCH



Use

- DEHT/DOTP – di-(2-ethylhexyl) terephthalate
- DINCH - diisononyl cyclohexanedicarboxyl
- The most popular non-phthalate plasticisers
 - DEHT is more widely used in the United States
 - DINCH is more frequently used in Europe
- Alternative plasticisers market share
 - DEHT – 42%
 - DINCH – ca 10%



Assessment

- DEHT - GreenScreen benchmark 3
- DINCH - GreenScreen benchmark 2

ALTERNATIVES: ESBO



- Plasticizer but also as compatibilizer, as well as a UV stabilizer for example for PVC
- For example, used in glass jar gaskets and cling film for food wrapping.
- Alternative plasticisers market share: 20%
- ESBO - GreenScreen benchmark 3

ALTERNATIVES: TOTM and ATBC



- Trimellitate: primarily used in applications where heat resistance is a requirement, for example in certain cables and wires, but also in flooring and wall coverings.
- Citrates: used as a plasticiser in cosmetic products and in PVC applications
- Alternative plasticisers market share:
 - Trimellitantes: 8%
 - Citrates: minor



- TOTM - GreenScreen benchmark 2
- ATBC - GreenScreen benchmark 3

PHTHALATES: ACHIEVING SUBSTITUTION

- Policy
- Business
- Key steps forward
 - Awareness
 - Visibility
 - Projects such as HCPP
 - ChemSec's Marketplace
 - Dissemination of knowledge



Replacing phthalates

Why and how to substitute this hard-to-spell chemical group



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**THANK YOU FOR
LISTENING!**