Known Uses of ortho-Phthalates in Food Contact Materials in the United States

| Food Contact Article | Material | Frequency Detected | Average Concentration of Phthalates | Phthalates Detected | Sources (see next page |
|---|---|-----------------------|---|--|---|
| Conveyor belt | PVC (vinyl) | 3 of 3 | 31 % | DINP | Carlos <i>et al</i> . (2018) |
| Conveyor belt | PVC (vinyl) | 2 of 2 | 6 % | DINP | Carlos <i>et al</i> . (2018) |
| Tubing | PVC (vinyl) | 4 of 5 | 38 % | DEHP, DIDP | Carlos <i>et al</i> . (2018) |
| Tubing (dairy) | PVC (vinyl) | 1 of 7 | 30 - 40 % | DEHP | Pure Strategies (2018) |
| Inflations (dairy) | Rubber (poly- butadiene-based) | 1 of 2 | 10 % | DIDP, DINP | Pure Strategies (2018) |
| Cap gaskets, bottled beer | PVC (vinyl) | 6 of 9 | 45 % | DEHP | Carlos <i>et al</i> . (2018) |
| Cap gaskets, non-alcoholic bottled beverages | PVC (vinyl) | 3 of 6 | 40 % | DEHP, DINP, DIDP | Carlos <i>et al</i> . (2018) |
| Cap gaskets, jarred foods | PVC (vinyl) | 4 of 24 | 44 % | DEHP, DIDP | Carlos <i>et al</i> . (2018) |
| Gloves, food service | PVC (vinyl) | 14 of 101 | 34 % | DINP, DIDP, DPHP, DEHP | Olson <i>et al</i> . (2019) |
| Packaging (due to inks, lacquers, and adhesives carried in recycled pulp) | Paper and paperboard | 12 of 17 | < 0.01% (100 parts per million) | DEHP, DBP, DIBP, BBP, DEP, DINP, DIDP | Geueke <i>et al</i> . (2018) Suciu <i>et al</i> . (2013) |
| Packaging (from use in Zigglar-Natta catalysts and/or in additives) | Plastic, such as: * Polyethylene * Polypropylene * ABS | - | < 0.02 % (200 parts per million) | DEHP, DBP, DIBP, DPenP | TERA (2015) |
| Packaging | Inks, lacquers, adhesives | - | ? | ? | FSAP (2018) |

Sources Cited:

Carlos KS, de Jager LS, Begley TH (2018). Investigation of the primary plasticizers present in polyvinyl chloride (PVC) products currently authorised as food contact materials. *Food Additives and Contaminants: Part A*. 35:6, 1214-1222. <u>https://doi.org/10.1080/19440049.2018.1447695</u>

Food Safety Alliance for Packaging (2018). Food Packaging Product Stewardship Considerations. Version 1.0. March 9. Institute of Packaging Professionals.

https://www.iopp.org/files/Food%20Packaging%20Product%20Stewardship%20Considerations%20FSAP-IoPP%20v1_0.pdf

Geueke B, Groh K, Muncke J (2018). Food packaging in the circular economy: Overview of chemical safety aspects for commonly used materials. *Journal of Cleaner Production*. 193:491-505. <u>https://doi.org/10.1016/j.jclepro.2018.05.005</u>

Olson L, Miller GZ and Belliveau M. (2019). Taking Off the Toxic Gloves: An Investigation of Phthalates and Other Chemicals of Concern in Food-Handling Gloves. Ecology Center with Environmental Health Strategy Center for Coalition for Safer Food Processing & Packaging. July 25.

Technical report: <u>https://www.ecocenter.org/healthy-stuff/reports/vinyl-gloves-study-2019</u>. *Summary report*: <u>https://www.toxicfreefood.org/wp-content/uploads/2019/08/Glove-Summary-FINAL.pdf.pdf</u>

Pure Strategies (2018). Sources of Phthalates in Dairy Farm Equipment. Prepared for Environmental Health Strategy Center and Coalition for Safer Food Processing & Packaging, with screening and testing by Ecology Center. March 20. *Full report*: <u>https://www.kleanupkraft.org/Phthalates-Farm-Equipment.pdf</u> *News release*: https://www.kleanupkraft.org/PR-Phthalates-Dairy-Farm-Equipment.pdf

Sucui NA, Tiberto F, Vaseleiadis S, Lamastra L, Trevisan M (2013). Recycled paper-paperboard for food contact materials: contaminants suspected and migration into foods and food simulant. *Food Chemistry*. 141(4):4146-4151. <u>https://doi.org/10.1016/j.foodchem.2013.07.014</u>. *Summary by Food Packaging Forum*: <u>https://www.foodpackagingforum.org/news/contaminants-migrate-from-recycled-paper-and-paperboard</u>

TERA (2015). Toxicology Excellence for Risk Assessment. Exposure Assessment: Potential for the Presences of Phthalates in Selected Plastics. October 15. Final Report to the U.S. Consumer Products Safety Commission. https://www.cpsc.gov/s3fs-public/pdfs/ReportonPhthalatesinFourPlastics.pdf

Adapted from the scientific literature and technical reports by Environmental Health Strategy Center (<u>www.ourhealthyfuture.org</u>) for the Coalition for Safer Food Processing & Packaging, February 2020

Acronyms: PVC = polyvinyl chloride, commonly referred to as "vinyl"; ABS = acrylonitrile butadiene styrene Individual phthalates (DEHP, DINP, etc.): see <u>https://www.kleanupkraft.org/data-summary.pdf</u>