ACC High Phthalates Panel Comments on Draft Identification of Priority Products Report to the Legislature, Safer Products for Washington Cycle 2 Implementation Phase 2, Publication 24-04-049

Background

The Washington State Department of Ecology (hereinafter Washington State DOE) has released its Cycle 2 Implementation Phase 2 Draft Identification of Priority Products Report to the Legislature as part of its implementation of the Safer Products for Washington law. The draft report identifies priority consumer products for the second review cycle of Safer Products for Washington. The draft report preliminarily identified cleaning and household care products, and sealants, caulks and adhesives as a significant source of ortho-phthalate exposure, with concerns expressed for potential exposure to sensitive subpopulations and the environment.

Phthalates are a broad class of chemicals with a range of physical, chemical, and toxicological properties and each chemical must be assessed individually

The toxicity of phthalates has been well studied over the past 30 years and has been the subject of numerous regulatory assessments. Phthalates constitute a broad class of chemicals with a range of physical, chemical and toxicological properties. The properties are structure-dependent. One differentiation is between Low Molecular Weight (LMW) phthalates with a C_3-C_6 carbon backbone (such as DEHP (DOP), DBP, and BBP) and High Molecular Weight (HMW) phthalates with a $\geq C_7$ backbone (such as DINP (di-isononyl phthalate) and DIDP (di-isodecyl phthalate). When evaluating the hazard profile of "ortho-phthalates," it is important to consider the molecular weight and to evaluate each distinct phthalate separately. The Washington DOE report however does not distinguish between phthalate categories, conflating known hazards of certain phthalates across the entire class, even where there is published evidence to the contrary.

High molecular weight ortho-phthalates are generally not used in cleaning and household care products

We are not aware of any use of high molecular weight ortho-phthalates in cleaning and household care products, such as cleaners, deodorizers, detergents, air fresheners, etc. Note that a distinction should be made between the uses of high molecular weight phthalates and low molecular weight phthalates such as DMP (Dimethyl phthalate) / DEP (Diethyl phthalate) which are often used as "solvents" in fragrances, cosmetics and wide range of home care products. For more information see REACH entries: Substance Information - ECHA - Dimethyl phthalate Substance Information - ECHA - Diethyl phthalate

High molecular weight phthalates in sealants, caulks and adhesives would not be expected to be a significant source of phthalate exposure in people, including sensitive subpopulations

HMW ortho-phthalates are substances with a very high boiling point, and very low volatility. They are formulated in sealants to provide performance properties to the finished application, unlike solvents in adhesives which are formulated as carriers and need to volatilize to "dry" or "cure" the adhesive. In other words, plasticizers are formulated to stay "permanently" in the sealant.

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Construction, home improvement or automotive sealants that use DINP and/or DIDP are based on polyurethanes or modified silane. They cure by chemical reactions (either with moisture in the air or catalyst), not evaporative drying.

Sealants are formulated to last many years in service, if not decades, to retain the sealant's mechanical properties over time. Plasticizer losses are *de minimis*, similar to the *de minimis* losses of plasticizer with PVC manufactured products.

Additionally, the surface area of a sealant seam is a small fraction of that for applications such as vinyl flooring or wallpaper, making the exposure to any eventually volatilized plasticizer extremely low (even lower than very low estimated exposure for flooring or wallpaper).

As for construction/home improvement sealants containing HMW ortho-phthalates having any potential impact on the environment, as noted above there would be only a *de minimis* loss of plasticizer once the sealant is cured. Note also that even if there is any loss, both DINP and DIDP are readily biodegradable.

Finally, plasticizers can be formulated from 10% to 35% by weight and sealants, caulks and adhesives can contain other plasticizers such as benzoates, adipates, etc. Thus, high molecular weight phthalates in sealants, caulks and adhesives would not be expected to be a significant source of phthalate exposure in people, including sensitive subpopulations.

High molecular weight phthalates pose little risk to the environment

The data shared in the WA State EIMS database for DINP is also described in the 2021 Survey of Phthalates in Washington State Waterbodies (Statewide Survey of Phthalates). WA State measured samples from 16 rivers, lakes and reservoirs and tentatively identified DINP in 2 freshwater sediments (~1-2 mg/kg-dw) and 3 marine sediments (~0.6-0.7 mg/kg-dw). Other samples were non-detect.

These samples with DINP detections in WA State are in line or lower than field values considered by EPA in their recent draft risk evaluation for DINP (see yellow highlighted values in below Table 3-1. *[Table 3-1 is from EPA's draft risk evaluation, with the final risk evaluation expected in early 2025*]. According to EPA's trophic transfer analysis, none of the values in Table 3-1 suggested unreasonable risk (including those resulting from very conservative modeling, > 40,000 mg/kg). This suggests that field samples evaluated thus far by the state indicate little risk.

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Table 3-1. Calculated DINP Mussel Concentrations from VVWM-PSC Modeled Values of DINP in Sediment and Published Literature

COU (Life Cycle Stage[a]/ Category[b]/ Sub-category[c])	OES	Flow Rate (m^3/day)	Annual Release per Site (kg/site-yr^{-1})[d]	Sediment Concentration (mg/kg)[e]
Processing/Incorporation into formulation, mixture, or reaction product/Plasticizers (adhesives manufacturing, custom compounding of purchased resin; paint and coating manufacturing; plastic material and resin manufacturing; synthetic rubber manufacturing; wholesale and retail trade; all other chemical product and preparation manufacturing; pigments)	Non-PVC material compounding	P50 7Q10: 24,822	608	41,000
		P90 7Q10: 15,490,000	608	66.7

Published literature

Sample Collection Conditions/ Location	Reference (Overall Quality Determination)	Sediment Concentration (mg/kg)
Maximum concentration of DINP within sediments/ Industrialized harbor, Kaohsiung Harbor, Taiwan	(Chen et al., 2016) (Medium)	26.5
Maximum concentration of DINP within sediments/ urban areas in Sweden collected by the Swedish National Screening Program, Swedish Environmental Research Institute	(Cousins et al., 2007) (Medium)	3.2
Maximum concentrations of DINP found within several large river basins in Germany	(Nagorka and Koschorreck, 2020) (High)	6.3

[a] Life Cycle Stage Use Definitions (40 CFR 711.3):
"Industrial use" means use at a site at which one or more chemicals or mixtures are manufactured (including imported) or processed.
"Commercial use" means the use of a chemical or a mixture containing a chemical (including as part of an article) in a commercial enterprise providing saleable goods or services.
Although EPA has identified both industrial and commercial uses here for purposes of distinguishing scenarios in this document, the Agency interprets the authority over "any manner or method of commercial use" under TSCA section 6(a)(5) to reach both.
[b] These categories of conditions of use appear in the Life Cycle Diagram, reflect CDR codes, and broadly represent conditions of use of DINP in industrial and/or commercial settings
[c] These subcategories reflect more specific conditions of use of DINP.
[d] Production volume uses high-end release distribution estimates (95th percentile).
[e] Sediment concentration represented by maximum daily average over the estimated days of release for each COU based on COU/OES characteristics described within the engineering supplement for DINP.

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