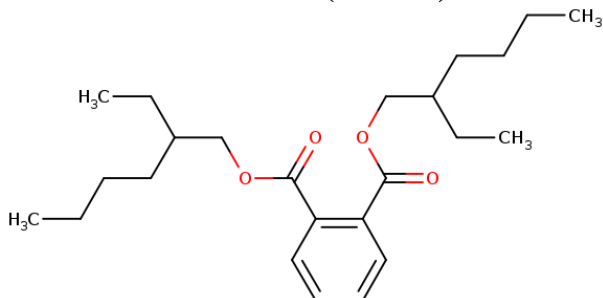




Nontechnical Summary of the TSCA Risk Evaluation for Diethylhexyl Phthalate (DEHP)



C₂₄H₃₈O₄ (CASRN: 117-81-7)

Why Is EPA Providing This Document?

EPA evaluated the risks of DEHP to human health and the environment under the Toxic Substances Control Act ([TSCA](#)). This document summarizes the results of the completed [Risk Evaluation for Diethylhexyl Phthalate \(DEHP\)](#).

What Is DEHP and How Is It Used?

DEHP is a clear, oily liquid. Produced and imported DEHP is primarily used as a plasticizer or stabilizing agent in the manufacture of adhesives, paints, coatings, and rubbers. DEHP is also used in PVC (polyvinyl chloride) and non-PVC plastic products across a variety of consumer, commercial, and industrial applications.

How Can Persons and the Environment Be Exposed to DEHP?

Exposure may occur in and near workplaces that make or use DEHP-containing products, which can also result in releases to water. Most DEHP released into water ends up in the sediment of nearby lakes and rivers. DEHP released to the air can attach to dust particles and deposit on land or into water. Such emissions can contribute to the exposure of the general

population to DEHP. In indoor environments, DEHP released from products over time can also adhere to dust. Consumers may be exposed from use of DEHP-containing products. EPA evaluated all these exposures to determine if DEHP presents an unreasonable risk of injury to human health and the environment.

Can DEHP Harm People Who Are Exposed?

Based on findings in laboratory animals, DEHP can cause a range of non-cancer health effects in people if exposure is at a level that causes toxicity. The most sensitive adverse (harmful) effect results from decreased fetal testicular testosterone levels, causing what is known as “phthalate syndrome.”

Can DEHP Harm the Environment?

DEHP can be harmful to the environment if exposure is at a level that causes toxicity. EPA assessed risks to aquatic organisms, aquatic-dependent mammals, and land mammals. Based on the scientific evidence, DEHP causes an unreasonable risk of injury to aquatic vertebrates and sediment-dwelling invertebrates (*e.g.*, insects) through surface water and pore water (*i.e.*, water in spaces within sediment), respectively. Although DEHP can enter air and soil, its concentrations are expected to be below levels that could cause harm to the environment.

How Has EPA Assessed DEHP Under TSCA?

EPA assessed risks to human health and the environment. As required by law, the Agency identified and evaluated potentially exposed or susceptible subpopulations (PESS¹), which include the following:

- workers, including those who manufacture, process, distribute, or use DEHP in the workplace;
- females of reproductive age;

¹ These groups may have higher exposures to DEHP or be more likely (predisposed) to be harmed by exposure to DEHP.

- pregnant women, infants, children, and adolescents;
- people who frequently use consumer products and/or articles containing high concentrations of DEHP;
- people living in close proximity to DEHP-releasing facilities (“fenceline” communities); and
- subsistence fishers and tribal populations whose diets include large amounts of fish.

EPA also evaluated risks from cumulative exposures to DEHP and five other phthalates that can all cause phthalate syndrome.² The cumulative risk assessment (CRA) describes analyses considering DEHP exposure under the TSCA conditions of use (COUs³) as the “individual assessment” or “single chemical assessment” and analyses also considering background exposure to other phthalates as the “cumulative assessment.”

The multi-chemical aspect of the evaluation is derived from the addition of background phthalate exposure as estimated from National Health and Nutrition Examination Survey (NHANES) biomonitoring data. Thus, risks are characterized not only for occupational and consumer exposures to DEHP alone, but also in conjunction with cumulative phthalate exposure that (1) may be experienced by the U.S. population, and (2) cannot be attributed to a specific COU under TSCA.

In May 2025, EPA released the [Draft Risk Evaluation for Diethylhexyl Phthalate \(DEHP\)](#) for public comment and peer review. The final

risk evaluation reflects changes made as the result of public comment and external peer review by the Science Advisory Committee on Chemicals ([SACC](#)⁴), who provided feedback across draft phthalate TSCA risk evaluations, including DEHP.

What Is EPA’s Final Risk Determination for Diethylhexyl Phthalate Under TSCA?

DEHP presents an unreasonable risk of injury to human health driven by risk to workers through 10 COUs, including risks to “occupational non-users” (ONUs⁵) for 8 of these COUs. EPA did not identify contributions to an unreasonable risk of injury due to exposure to consumers or the general population under any COU.

DEHP presents an unreasonable risk of injury to the environment driven by risk to aquatic vertebrates through 20 COUs, as well as risk to sediment-dwelling invertebrates through 18 of these COUs.

The following 10 COUs significantly contribute to the unreasonable risk of injury to the health of workers through inhalation exposure:

- Manufacturing – importing (workers)
- Processing – incorporation into formulation, mixture, or reaction product⁶ (workers and ONUs)
- Processing – incorporation into article – plasticizer in basic organic chemical manufacturing; plastics product manufacturing; rubber product manufacturing; miscellaneous

² The six phthalates included in the cumulative assessment are butyl benzyl phthalate ([BBP](#)), dibutyl phthalate ([DBP](#)), dicyclohexyl phthalate ([DCHP](#)), [DEHP](#), diisobutyl phthalate ([DIBP](#)), and diisononyl phthalate ([DINP](#)).

³ Under TSCA, COUs are the specific circumstances, “as determined by the Administrator, under which a chemical substance is intended, known, or reasonably foreseen to be manufactured, processed, distributed in commerce, used, or disposed of.”

⁴ See [EPA-HQ-OPPT-2024-0551](#) for further information about and a full list of materials reviewed by the SACC.

⁵ ONUs are employed persons who do not directly handle the chemical substance but may be indirectly exposed to it as part of their employment due to their proximity to the chemical.

⁶ The full COU is Processing – incorporation into formulation, mixture, or reaction product – plasticizer in plastic material and resin manufacturing; synthetic rubber manufacturing; basic organic chemical manufacturing; custom compounding of purchased resins; miscellaneous manufacturing; paint and coating manufacturing; adhesive manufacturing; basic inorganic chemical manufacturing; wholesale and retail trade; services; and ink, toner, and colorant manufacturing.

manufacturing; and PVC extruding (workers and ONUs)

- Processing – repackaging – repackaging in wholesale and retail trade and in paint and coating manufacturing (workers)
- Industrial use – construction, paint, electrical, and metal products – paints and coatings (workers and ONUs)
- Industrial use – construction, paint, electrical, and metal products – adhesives and sealants (workers and ONUs)
- Commercial use – construction, paint, electrical, and metal products – adhesives and sealants (workers and ONUs)
- Commercial use – construction, paint, electrical, and metal products – paints and coatings (workers and ONUs)
- Commercial use – furnishing, cleaning, treatment care products – all-purpose waxes and polishes (workers and ONUs)
- Commercial use – packaging, paper, plastic, toys, hobby products – inks, toner, and colorants (workers and ONUs)

The following 20 COUs significantly contribute to the unreasonable risk of injury to the environment, specifically aquatic vertebrates and sediment-dwelling invertebrates:

- Manufacturing – manufacturing
- Manufacturing – importing
- Processing – incorporation into formulation, mixture, or reaction product (see footnote 6 for full COU description)
- Processing – incorporation into article – plasticizer in basic organic chemical manufacturing; plastics product manufacturing; rubber product manufacturing; miscellaneous manufacturing; and PVC extruding
- Processing – repackaging – repackaging in wholesale and retail trade and in paint and coating manufacturing
- Processing – other uses – miscellaneous processing (cyclic crude and intermediate manufacturing; processing aid specific to hydraulic fracturing)

- Industrial use – construction, paint, electrical, and metal products – paints and coatings
- Industrial use – construction, paint, electrical, and metal products – adhesives and sealants
- Industrial use – other uses – hydraulic fracturing
- Industrial use – other uses – solid rocket motor insulation and other aerospace applications
- Industrial use – other uses – automotive articles
- Commercial use – construction, paint, electrical, and metal products – adhesives and sealants
- Commercial use – construction, paint, electrical, and metal products – paints and coatings
- Commercial use – furnishing, cleaning, treatment care products – all-purpose waxes and polishes
- Commercial use – furnishing, cleaning, treatment care products – fabric enhancer
- Commercial use – furnishing, cleaning, treatment care products – fabric, textile, and leather products; furniture and furnishings
- Commercial use – packaging, paper, plastic, toys, hobby products – ink, toner, and colorants
- Commercial use – other uses – laboratory chemicals
- Commercial use – other uses – automotive articles and products
- Disposal

A total of 24 COUs do *not* significantly contribute to the unreasonable risk for DEHP, nor do cumulative exposures contribute to unreasonable risks—including 1 related to distribution, 1 to recycling, 8 to commercial uses, and 14 associated with consumer uses of DEHP. These are described in the [*Risk Evaluation for Diethylhexyl Phthalate \(DEHP\)*](#).

How Will EPA Protect Human Health and the Environment from Diethylhexyl Phthalate Under TSCA?

Following this final determination of unreasonable risk, TSCA requires EPA to propose a regulation to mitigate the unreasonable risk of DEHP. After taking public comment on the proposed regulation, TSCA requires the Agency to finalize risk management regulations for DEHP. Such regulations could include requirements for worker protection, labeling, recordkeeping, or restricting use of DEHP for specific uses.