



Phthalates

Phthalates are a group of chemicals used to make plastics more flexible and harder to break. They are often called plasticizers. Some phthalates are used as solvents (dissolving agents) for other materials. They are used in hundreds of products, such as vinyl flooring, adhesives, detergents, lubricating oils, automotive plastics, plastic clothes (raincoats), and personal-care products (soaps, shampoos, hair sprays, and nail polishes).

Phthalates are used widely in polyvinyl chloride plastics, which are used to make products such as plastic packaging film and sheets, garden hoses, inflatable toys, blood-storage containers, medical tubing, and some children's toys.

How People Are Exposed to Phthalates

People are exposed to phthalates by eating and drinking foods that have been in contact with containers and products containing phthalates. To a lesser extent exposure can occur from breathing in air that contains phthalate vapors or dust contaminated with phthalate particles. Young children may have a greater risk of being exposed to phthalate particles in dust than adults because of their hand-to-mouth behaviors. Once phthalates enter a person's body, they are converted into breakdown products (metabolites) that pass out quickly in urine.

How Phthalates Affect People's Health

Human health effects from exposure to low levels of phthalates are unknown. Some types of phthalates have affected the reproductive system of laboratory animals. More research is needed to assess the human health effects of exposure to phthalates.

Levels of Phthalate Metabolites in the U.S. Population

In the *Fourth National Report on Human Exposure to Environmental Chemicals (Fourth Report)*, CDC scientists measured 13 phthalate metabolites in the urine of 2,636 or more participants aged six years and older who took part in the National Health and Nutrition Examination Survey (NHANES) during 2003–2004. For several phthalate metabolites, results from the prior survey periods of 1999–2000 and 2001–2002 are also included in the *Fourth Report*. By measuring phthalate metabolites in urine, scientists can estimate the amount of phthalates that have entered people's bodies.

- CDC researchers found measurable levels of many phthalate metabolites in the general population. This finding indicates that phthalate exposure is widespread in the U.S. population.
- Research has found that adult women have higher levels of urinary metabolites than men for those phthalates that are used in soaps, body washes, shampoos, cosmetics, and similar personal care products.

Finding a detectable amount of phthalate metabolites in urine does not mean that the levels of one or more will cause an adverse health effect. Biomonitoring studies on levels of phthalate metabolites provide physicians and public health officials with reference values so that they can determine whether people have been exposed to higher levels of these chemicals than are found in the general population. Biomonitoring data can also help scientists plan and conduct research on exposure and health effects.

For More Information

- Agency for Toxic Substances and Disease Registry
Public Health Statement for Di-n-butyl Phthalate
<http://www.atsdr.cdc.gov/toxprofiles/phs135.html>

Public Health Statement for Di(2-ethylhexyl)phthalate (DEHP)
<http://www.atsdr.cdc.gov/toxprofiles/phs9.html>

Public Health Statement for Diethyl Phthalate
<http://www.atsdr.cdc.gov/toxprofiles/phs73.html>

Public Health Statement for Di-n-octylphthalate (DNOP)
<http://www.atsdr.cdc.gov/toxprofiles/phs95.html>

ToxFAQs for Di-n-butyl Phthalate
<http://www.atsdr.cdc.gov/tfacts135.html>

ToxFAQs for Di(2-ethylhexyl)phthalate (DEHP)
<http://www.atsdr.cdc.gov/tfacts9.html>

ToxFAQs for Diethyl Phthalate
<http://www.atsdr.cdc.gov/tfacts73.html>

ToxFAQs for Di-n-octylphthalate (DNOP)
<http://www.atsdr.cdc.gov/tfacts95.html>

- Environmental Protection Agency
Consumer Fact Sheet on Di (2- ethylhexyl) Phthalate
<http://www.epa.gov/safewater/dwh/c-soc/phthalat.html>

Dibutyl phthalate
<http://www.epa.gov/iris/subst/0038.htm>

Di(2-ethylhexyl) phthalate (DEHP)

<http://www.epa.gov/iris/subst/0014.htm>

- Food and Drug Administration
Phthalates and Cosmetic Products
<http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm128250.htm>
- National Library of Medicine, National Institutes of Health
ToxTown—Phthalates
http://toxtown.nlm.nih.gov/text_version/chemicals.php?id=24

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The Centers for Disease Control and Prevention (CDC) protects people's health and safety by preventing and controlling diseases and injuries; enhances health decisions by providing credible information on critical health issues; and promotes healthy living through strong partnerships with local, national, and international organizations.