

ADVERSE HEALTH EFFECTS OF PLASTICS

In addition to creating safety problems during production, many chemical additives that give plastic products desirable performance properties also have negative environmental and human health effects. These effects include

- Direct toxicity, as in the cases of lead, cadmium, and mercury
- Carcinogens, as in the case of diethylhexyl phthalate (DEHP)
- Endocrine disruption, which can lead to cancers, birth defects, immune system suppression and developmental problems in children.

See the [Adverse Health Effects Grid](#) for a list of commonly used plastics and their known health effects.

Chemical Migration from Plastic Packaging into Contents

People are exposed to these chemicals not only during manufacturing, but also by using plastic packages, because some chemicals migrate from the plastic packaging to the foods they contain. Examples of plastics contaminating food have been reported with most plastic types, including Styrene from polystyrene, plasticizers from PVC, antioxidants from polyethylene, and Acetaldehyde from PET.

Among the factors controlling migration are the chemical structure of the migrants and the nature of the packaged food. In studies cited in Food Additives and Contaminants, LDPE, HDPE, and polypropylene bottles released measurable levels of BHT, Chimassorb 81, Irganox PS 800, Irganix 1076, and Irganox 1010 into their contents of vegetable oil and ethanol. Evidence was also found that acetaldehyde migrated out of PET and into water.

Recommendations

Find alternatives to plastic products whenever possible. Some specific suggestions:

- Buy food in glass or metal containers; avoid polycarbonate drinking bottles with Bisphenol A
- Avoid heating food in plastic containers, or storing fatty foods in plastic containers or plastic wrap.
- Do not give young children plastic teethingers or toys
- Use natural fiber clothing, bedding and furniture
- Avoid all PVC and Styrene products

<i>Plastic</i>	<i>Common Uses</i>	<i>Adverse Health Effects</i>
Polyvinylchloride (#3PVC)	Food packaging, plastic wrap, containers for toiletries, cosmetics, crib bumpers, floor tiles, pacifiers, shower curtains, toys, water pipes, garden hoses, auto upholstery, inflatable swimming pools	Can cause cancer, birth defects, genetic changes, chronic bronchitis, ulcers, skin diseases, deafness, vision failure, indigestion, and liver dysfunction
Phthalates (DEHP, DINP, and others)	Softened vinyl products manufactured with phthalates include vinyl clothing, emulsion paint, footwear, printing inks, non-mouthing toys and children's products, product packaging and food wrap, vinyl flooring, blood bags and tubing, IV containers and components, surgical gloves, breathing tubes, general purpose labware, inhalation masks, many other medical devices	Endocrine disruption, linked to asthma, developmental and reproductive effects. Medical waste with PVC and phthalates is regularly incinerated causing public health effects from the release of dioxins and mercury, including cancer, birth defects, hormonal changes, declining sperm counts, infertility, endometriosis, and immune system impairment.

<i>Plastic</i>	<i>Common Uses</i>	<i>Adverse Health Effects</i>
Polycarbonate, with Bisphenol A (#7)	Water bottles	Scientists have linked very low doses of bisphenol A exposure to cancers, impaired immune function, early onset of puberty, obesity, diabetes, and hyperactivity, among other problems (Environment California)
Polystyrene	Many food containers for meats, fish, cheeses, yogurt, foam and clear clamshell containers, foam and rigid plates, clear bakery containers, packaging “peanuts”, foam packaging, audio cassette housings, CD cases, disposable cutlery, building insulation, flotation devices, ice buckets, wall tile, paints, serving trays, throw-away hot drink cups, toys	Can irritate eyes, nose and throat and can cause dizziness and unconsciousness. Migrates into food and stores in body fat. Elevated rates of lymphatic and hematopoietic cancers for workers.
Polyethylene (#1 PET)	Water and soda bottles, carpet fiber, chewing gum, coffee stirrers, drinking glasses, food containers and wrappers, heat-sealed plastic packaging, kitchenware, plastic bags, squeeze bottles, toys	Suspected human carcinogen
Polyester	Bedding, clothing, disposable diapers, food packaging, tampons, upholstery	Can cause eye and respiratory-tract irritation and acute skin rashes
Urea-formaldehyde	Particle board, plywood, building insulation, fabric finishes	Formaldehyde is a suspected carcinogen and has been shown to cause birth defects and genetic changes. Inhaling formaldehyde can cause cough, swelling of the throat, watery eyes, breathing problems, headaches, rashes, tiredness
Polyurethane Foam	Cushions, mattresses, pillows	Bronchitis, coughing, skin and eye problems. Can release toluene diisocyanate which can produce severe lung problems
Acrylic	Clothing, blankets, carpets made from acrylic fibers, adhesives, contact lenses, dentures, floor waxes, food preparation equipment, disposable diapers, sanitary napkins, paints	Can cause breathing difficulties, vomiting, diarrhea, nausea, weakness, headache and fatigue
Tetrafluoroethylene	Non-stick coating on cookware, clothes irons, ironing board covers, plumbing and tools	Can irritate eyes, nose and throat and can cause breathing difficulties

Sources:

- Centers for Disease Control Report, “[National Report on Human Exposure to Environmental Chemicals](#),” 2001.
- [Dadd, Debra](#), Home Safe Home, Penguin Putnam, New York, 1997.
- Ecology Center [Plastic Task Force](#) Report, Berkeley, CA, 1996.
- Goettlich, Paul, “[What are Endocrine Disruptors?](#),” 2001
- National Resources Defense Council website, “[Endocrine Disruptors FAQ](#),” 2001.

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