

# Health Risks and Environmental Issues

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## Plastics: The Sixth Basic Food Group – Part 2

"Plastics – An Important Part of Your Healthy Diet," touts the American Plastics Council in a full-page ad in

*National Geographic 2000 Magazine*, suggesting that plastics could be thought of as "the 6th basic food group." "Oh, you certainly wouldn't eat them, but plastic packaging does help protect our food supply," continues the message. Could there be a little tongue in cheek here on the part of industry scientists? Truth be told, we are indeed *eating* plastic chemicals, as well as *inhaling* them and *absorbing* them through our skin.

### Plastics in the Diet

American children are consuming an average of 5.8 milligrams of the phthalate plasticizer, DEHP, per day. This comes from food stored in plastic wrap, water stored in plastic containers, toys, teethingers, and baby bottles. Phthalates are even found in the inks used to print on plastic, cardboard and foil, and can leach through the wrapping material into the food.<sup>1</sup>

Being fat-soluble these chemicals are easily absorbed from plastic packaging materials and concentrate in high fat foods, such as dairy products including cheese, butter, margarine, as well as meat products. People consuming large quantities of these foods may also be ingesting large amounts of phthalates. A word of caution – many organic foods, including cheese, are wrapped in plastic packaging materials. Whereas special order cheese cut at a deli counter is often wrapped in waxed paper.

*Consumer Reports* tested several brands of plastic wrap and found DEHP in Reynolds Wrap and Saran Wrap, but not in plastic wrap by America's Choice, Duane Reade, Foodtown, Glad Crystal, Clear Polyethylene and White Rose.<sup>2</sup>

### Plastics Everywhere

Phthalates have become the most abundant synthetic chemical in our environment. Used as a softener in plastic products they can be found in building materials, carpet backing, vinyl tile, covering on wires and cables, garden hoses, tool handles, automobile undercoating, artificial leather, dishwasher baskets, flea collars, insect repellents, skin creams, hair sprays, perfumes, nail polish, notebook covers, toys, teethingers, baby bottles, blood bags, and other medical devices, in addition to food wrap and food packaging.<sup>3</sup>

The plastic industry produces over a billion pounds of phthalates yearly, and spends millions of dollars advertising their safety and usefulness. Health and environmental advocates have been arguing for years that plastics are neither safe, nor necessary. New studies are beginning to shed light on how serious and pervasive a health risk they pose, and how easily the chemicals are absorbed, ingested, and inhaled.

### Plastics Pose Health Risks

Phthalates, added to polyvinyl chloride (PVC) products to make them more pliable, have been implicated in several recent studies as causing birth defects, damage to the reproductive system, kidneys, and heart of lab mice and rats.<sup>4</sup>

The primary phthalates in soft vinyl toys are di-isononyl phthalate (DINP) and di(2-ethylhexyl) phthalate (DEHP). DEHP is considered a "probable human carcinogen" by the US Environmental Protection Agency (EPA). Some phthalates in the bloodstream mimic female hormones, while others interfere with male hormones leading to birth defects and sexual abnormalities.

DEHP is increasingly being replaced by DINP, about which less information is known. Its toxicity, however, is well enough established to warrant labels on vials of DINP warning researchers that the chemical may cause cancer, is harmful if swallowed, or spilled on skin.<sup>5</sup>

### CDC Findings

An ongoing twenty-year study by the Centers for Disease Control and Prevention (CDC) has consistently found higher levels of phthalates in American adults than had been expected.<sup>6</sup> Researchers tested urine from 289 adults and found that commonly encountered phthalates "float in peoples' bodies...at low levels."<sup>7</sup>

This was no surprise to health advocates who have been arguing for a long time that phthalates used in toys and medical equipment are dangerous.

### Plastics and Breast Cancer Cells

Plastics, used in thousands of everyday products from food wrap to pesticides, have been found to leach endocrine disrupting chemicals into the bodies of unsuspecting consumers of all ages.

Some 30 years ago Doctors Ana Soto and Carlos Sonnenschien at Tufts University, School of Medicine, were among the first scientists to find that endocrine disrupting chemicals leached from plastic test tubes. After performing numerous tests they found the hormone mimicking chemicals leaching from plastic test tubes caused rampant proliferation of breast cancer cells. An experiment at Stanford University School of Medicine found similar results from chemicals leaching from plastic water jugs.<sup>8</sup>

The EPA's Endocrine Disrupter Screening and Testing Advisory Committee (EDSTAC) has been looking into this for two years, but thus far has provided the American public with very little information.<sup>9</sup>

### Women of Child-Bearing Age

Not only are there high levels of phthalates among Americans in general, but CDC chemist, John Brock, found that "women of child-bearing age (20-40) had 50% higher phthalates than average."<sup>10</sup>

## Plastics

Some phthalates known to cause birth defects in laboratory animals are commonly found in perfumes, nail polish, and hair sprays – products widely used by this age group – and which “can be absorbed through the lungs...”<sup>11</sup>

Referring to the high levels of phthalates found in young women, “That’s not where you want them, when dealing with compounds that cause birth defects,” stated Paul M.D. Foster of the Chemical Industry Institute of Toxicology.<sup>12</sup>

Taking a stand on behalf of public health, the Environmental Health Network of California has petitioned the US Food and Drug Administration (FDA) to require labeling of perfumes that contain toxic phthalates such as Calvin Klein’s *Eternity*.<sup>13</sup>

### Baby Girls in Puerto Rico

A major study investigating premature breast development (precocious thelarche) among thousands of girls in Puerto Rico under the age of two has produced some interesting findings. Eight of every 1000 baby girls, nearly 1%, have been diagnosed with this condition.

Scientists carefully eliminated several possible risk factors such as hormones in meat, pharmaceutical factory smoke, insecticides and estrogenic chemicals in formula. Twenty years of research now suggests that phthalates may be contributing to the epidemic.<sup>14</sup>

Thirty-five of 41 girls affected, showed phthalates in their blood, versus only seven out of 35 in a control group. The affected group showed 450 p/p/b (parts per billion) as opposed to only 70 p/p/b in the control group.<sup>15</sup>

“Most of the phthalates found in the Puerto Rican infants were di-(2-ethylhexyl), or DEHP, a softening agent in polyvinyl chloride (PVC) products. DEHP is among the most widely used phthalates, and is considered the most potent.”<sup>16</sup>

It is believed the contamination levels of the girls in Puerto Rico is extremely high because the island imports huge quantities of commercial foods packaged in phthalate-containing plastics. In addition, Puerto Rico has a hot and humid climate making air conditioning very desirable. Unfortunately, it seems that air conditioning traps airborne phthalates inside homes and public buildings.<sup>17</sup>

### “Barbies” Linked to Early Puberty

It was bad enough that Mattel’s Barbie dolls with exaggerated female proportions set a standard which young girls hoped to achieve. For decades researchers have been concerned about the psychological impact of the “Barbie” body on the development of young girls. Everything from anorexia to breast implants have been associated with the “Barbie” influence among young females in our society.

Now comes an even greater threat. According to recent research, phthalates leaching out of old Barbie dolls may disrupt hormone development.<sup>18</sup> For over 30 years young girls have spent hours playing with Barbie dolls. Younger siblings preferred chewing on the plastic dolls, just as they would chew on any chewable plastic toy.

Researchers fear this may be another contributing factor to early puberty among females growing up in our culture. Industry responds by claiming there is no absolute evidence, and that more studies are needed, but is often reluctant to provide the funding necessary for additional studies.

### Baby Bottles & Teethers

Pacifiers and baby bottle nipples are mostly made of latex or silicone, neither product under suspicion at this time. Phthalate softeners, however, are frequently found in teething items and baby bottles made from polycarbonate, a clear and rigid plastic.

*Consumer Reports’* researchers found bisphenol-A leached from plastic baby bottles into infant formula when heated, and advises consumers to avoid polycarbonate baby bottles until more is known about their possible effects on babies.<sup>19</sup>

Glass bottles or opaque bottles (duller plastic, often colored) made of polyethylene do not leach phthalates (Frazer). Gerber and Evenflo voluntarily took phthalates out of vinyl and baby care products and Hasbro stopped making teethingers and rattles. However, NYPIRG (New York Public Interest Research Group) cautions parents about buying old Hasbro products, such as *Teeth ‘n’ Toy Soft Animal Teether Assortment*, *Disney Babies Teether ‘n’ Travel*, or *Babies Hold ‘n’ Soothe Teether*.<sup>21</sup>

### Children’s Toys

Since 1996 Greenpeace has steadfastly raised public awareness about the hazards of toxic chemical additives in polyvinyl chloride (PVC) plastic toys because phthalate plasticizers leach into children’s mouths when toys are chewed or sucked. The chemicals are “free-floating,” and can “offgas,” or evaporate from soft PVC products in the home and bind to airborne particles such as dust, and increase children’s exposure.<sup>22</sup>

Several retailers including Toys ‘R’ Us and Kmart are removing the offending plastic toys from their stores. Mattel has decided to phase out non-renewable petroleum based plastics in favor of materials derived from edible and plant starches.<sup>23</sup>

Ten countries, including Germany, France, Sweden, and Mexico have either banned or restricted these products. Some companies such as IKEA, Lego, and Nike have initiated a phase out of PVC toys. Though an “emergency ban” on soft PVC toys proposed by the European Union has been delayed, Greenpeace believes the proposal may serve to pressure American toy manufacturers to take action.

Despite the fact that some phthalates in the bloodstream mimic female hormones, while others interfere with male hormones leading to birth defects and altered sexual development, US regulators have failed to impose regulatory guidelines on industry. Instead, the US government has relied solely on voluntary actions by toy companies to eliminate the use of PVC and its toxic additives in children’s toys.<sup>24</sup>

### Plastics Interfere with Sperm Production

CDC scientist, John Brock, reveals that phthalates are dangerous in several ways. They kill cells that produce sperm, verifying a 30-year decline in sperm production by men in industrialized countries (1.5% drop per year). Phthalates have induced cases of undescended testicles in lab animals.<sup>25</sup> As estrogen mimickers they may also play a role in testicular cancer.<sup>26</sup> Both problems are increasing in the male population.

“Phthalates have the potential to disrupt boys’ reproductive development,” according to a recent report from the National Toxicology Program’s Center for the Evaluation of Risks to Human Reproduction (CERHR), a division of the National Institute of Environmental Health Sciences in Research Triangle Park, NC.<sup>27</sup>

### Greenpeace Emphasizes Prevention

Industry’s immediate reaction to negative health claims about any class of products, be it PCBs or phthalates, is to charge that insufficient proof exists and that more studies are needed. Instead of providing the funds required to carry out the necessary

studies, industry prefers to invest millions of dollars in advertising and lobbying. Government regulation is often hampered by budget cuts, staff reduction, political and corporate influence.

Public health issues are often better represented by non-governmental consumer organizations. GREENPEACE is one of these watchdog groups that has maintained a consistent, often controversial, position in exposing abusers of public and environmental health.

As taxpayers we have very little say as to whether our money is spent to promote public interests, or corporate interests. Those who wish to promote public health issues can make a contribution to the Greenpeace "Anti-Toxics Action Campaign," 1436 U. Street, NW, Washington, DC 20009. GREENPEACE advises consumers to avoid using plastic products that are known to contain phthalates, while it continues its campaign to have these hazardous chemicals removed from the marketplace.

#### More Information on Plastics

Rachel's Environmental Health Weekly, [www.rachels.org](http://www.rachels.org)  
 GREENPEACE, [www.greenpeaceusa.org/toxics/toxictots.htm](http://www.greenpeaceusa.org/toxics/toxictots.htm)  
 Consumer Reports (discussion of plastic wrap) [www.ConsumerReports.org](http://www.ConsumerReports.org)  
 Information on phthalates and endocrine disrupting chemicals [www.ourstolenfuture.org](http://www.ourstolenfuture.org)  
 NYPIRG "Trouble in Toyland," [www.nypirg.org](http://www.nypirg.org)  
 World Wildlife Fund, [www.worldwildlife.org](http://www.worldwildlife.org)

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