

Just the Facts...

Health Safety of Plastics Used for Food and Drinking Water Packaging

Facts About Plastic

There are two important components of plastic: the polymer or resin that makes up the bulk of the plastic and the additives. Seven resin identification (or material container) codes, which identify the resin types, were developed by the Society of the Plastics Industry (SPI), and are “recycle” symbols of clockwise arrows forming a triangle around a number, with abbreviations below. The codes are shown in the table below. Additives, some of them toxic, provide characteristics such as color, durability, and flexibility.

Plastic Identification Symbol and Abbreviation(s)	Plastic Type and Examples of Uses
 PET or PETE	Polyethylene terephthalate (e.g., soft drink and bottled water)
 HDPE	High density polyethylene (e.g., grocery bags, base cups, and beverage bottles)
 PVC	Polyvinyl chloride (e.g., pipes)
 LDPE	Low density polyethylene (e.g., various containers, dispensing bottles, and tubing)
 PP	Polypropylene (e.g., food containers)
 PS	Polystyrene (e.g., cafeteria trays and toys)
 PC or OTHER	Polycarbonate (PC) or other plastics, including acrylonitrile, butadiene styrene acrylic, polyactic acid, nylon, and fiberglass.

Source: Wikipedia.org at http://en.wikipedia.org/wiki/Resin_identification_code

Contrary to popular belief, the resin codes do not indicate specific information about how the materials should be used. Rather, they comprise a uniform coding system that is applied nationwide to help consumers and recyclers sort and market plastics. A

single type of plastic may consist of a family of ingredients, and the process for producing a final product is proprietary. Therefore, the integrity and usefulness of the plastic identification system depends on manufacturers using the codes in accordance with their plastics’ intended uses.¹

Significance of Plastics Safety

Multiple media reports have been circulated regarding the “dangers” of plastics used for food and bottled water. Undoubtedly, these reports have caused concerns amongst consumers. The following information clarifies recent news headlines:

Headline: Plastics leach chemical contaminants in the microwave or freezer at levels that are harmful to health.

Certain chemical contaminants may migrate from plastic containers into the contained food and water. However, the U.S. Food and Drug Administration (FDA) determines the amount and toxicity of any substances that may so migrate before they approve the each type of plastic for use as a food packaging material. They estimate worst case exposures, and include margins of safety for sensitive populations such as the very young, the very old, pregnant women, and immunodepressant individuals to ensure maximum health protection. Exposures to cold temperatures, sunlight, and pressure are also considered in the approval process.²

Headline: Plastics contain dioxins, a group of contaminants labeled as “likely human carcinogens” by the Environmental Protection Agency.

The FDA has found no evidence that plastic containers or films contain dioxins, nor is there evidence that they contain chemical ingredients that form dioxins under normal use (e.g., freezing or heating).³ Dioxins are

produced unintentionally as byproducts of certain industrial processes, primarily, incineration activities including the combustion of fuel, wood, and coal.

Headline: Some plastic bottled water packaging contains chemical phthalates and bisphenol A which may mimic human hormones and adversely affect the body's normal functions.

All substances used in commercial food and water contact plastics must be reviewed and approved by the FDA to ensure health safety. The FDA conducts risk assessments based on information provided by research organizations, such as the National Toxicology Program, that measure or model the migration of toxic substances from food and water contact plastics in order to estimate human exposures and their potential to cause adverse health effects. To receive approval by the FDA for use as a food contact substance, the exposure levels of any toxic substances that may migrate into food and liquid must be within a margin of safety.

Current Federal Regulatory and International Guidance

All food, bottled water, and associated packaging materials sold in the United States are regulated under the Federal Food, Drug, and Cosmetic Act, and enforced by the FDA.⁴ All substances used to make packaging material for food and beverages, including plastics for bottled water, must be determined to be safe for their intended use before they can be marketed. As part of the approval process, the FDA evaluates the potential for chemical ingredients of food/beverage packaging (also referred to as “food contact substances”) to migrate into the food or liquid. The FDA considers the amounts and toxicities of material transfer that do not pose a risk to human health, including infants and children. Health Canada and the European Food Safety Authority (EFSA) also have similar policies and requirements for food contact substances in their countries. Material that is made for contact with food and water may also be certified by testing to NSF International [formerly the National Sanitation Foundation (NSF)] Standard 61. NSF International is a third-party organization that conducts a wide array of certification to confirm manufacturer claims of product safety and efficacy.

Current Military Actions

The U.S. Army Veterinary Command is responsible for all matters of public health/consumer protection related

to food safety and quality, including bottled water, within the Department of Defense (DOD). They maintain close relations with Federal, State, and military agencies to ensure adequate consumer protection, food quality, and product safety. All food and water products bought and sold by DOD must meet all Federal, State, and military requirements.

Consumer Actions

The FDA and other regulatory agencies continue to review current and new substances used in contact with food and bottled water. If the FDA or DOD determine that food, water, its related packaging, or handling poses a health threat, they have the authority to take restrict or ban that product without legislative approval. Consumers may also choose alternatives to food and water packaged or stored in plastics. Examples include glass-made baby bottles, stainless steel beverage containers, glass food storage containers, tap water (as opposed to bottled water), purchasing fresh foods or foods packaged in glass jars. For additional information, contact the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) at commercial telephone (410) 436-3919 or email Water.Supply@amedd.army.mil. Finally, consumers can obtain up-to-date information on plastics safety or certification from these websites:

U.S. Food and Drug Administration
<http://www.fda.gov>

www.Recalls.gov (a Federal interagency website for product recalls) <http://www.recalls.gov>

International Bottled Water Association (IBWA)
<http://www.bottledwater.org>

NSF International
<http://www.nsf.org>

References

¹ Society of the Plastics Industry (SPI), “SPI Resin Identification Code: Guide to Correct Use”, <http://www.plasticsindustry.org/outreach/recycling/2124.htm> (accessed 6 May 2008).

² FDA Center for Food Safety and Applied Nutrition, “FDA’s Office of Food Additive Safety”, *Food Safety Magazine*, Dec 2002/Jan 2003.

³ Michelle Meadows, “Plastic and the Microwave”, *FDA Consumer Magazine*, Nov/Dec 2002, http://www.fda.gov/fdac/features/2002/602_plastic.html (accessed 29 April 2008).

⁴ Federal Food, Drug, and Cosmetic Act, codified in United States Code, Title 21, Chapter 9 [Food Additives and Contact Substances regulation can be found in 21 CFR Parts 170-189].