

Bisphenol A and Polycarbonate Plastics Questions and Answers

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1. What is bisphenol A?

Bisphenol A (BPA) is a chemical used to make for polycarbonate plastic and resins. It has been used safely in the manufacture of these materials for more than 40 years.

2. Where is polycarbonate plastic used?

Many familiar consumer products are made from polycarbonate plastics, including compact disks, impact resistant eye glass lenses, dental fillings, and food and beverage containers, including bottled water containers. Polycarbonate plastic is also used to make streetlight globes, small and large household appliances, components of electrical/electronic devices, automotive applications, telephones, and safety and sports helmets. Polycarbonate sheets are used extensively in signs, windows and window protection, walkways, roofing structures, greenhouses, solar and construction glazing, and skylights.

In addition, many food and medical devices are produced from polycarbonate (e.g., blood oxygenators used to purify blood and intravenous harnesses). Because of its use in food contact and medical products, polycarbonate and bisphenol A have undergone extensive safety testing.

As recently as January 2007, the European Food Safety Authority (EFSA), after completing an extensive, independent expert panel review of all new scientific data from the past five years concluded that bisphenol A does not post a risk to human health at the trace levels present in consumer products. The EFSA findings were confirmed by independent expert panels in both the United States and Japan. Polycarbonate plastics have been deemed safe packaging for food products by these and other food regulatory agencies worldwide.

3. How is polycarbonate plastic used in food packaging?

Polycarbonate plastic is used in both beverage and food containers because it is hygienic and provides protection from food contamination and spoilage. Plastics have proven to be excellent in protecting food and beverages from bacteria, which is vitally important in safeguarding public health.

All plastics intended for contact with foods or beverages are regulated by Health Canada to assure their safety. In addition, all products for food contact applications made from bisphenol A must meet health and safety regulatory guidelines throughout the world. Polycarbonate resins are employed in food-contact uses primarily in such applications as components of food processors, microwave ovenware, table ware, refrigerator crisper drawers, food-storage containers, and returnable water, milk and juice containers.

4. What bottled water containers are made with polycarbonate plastic?

Polycarbonate can be used to manufacture a variety of plastic bottled water containers from one to 18 litres. The plastic used in all bottled water containers is shown to be safe through extensive laboratory testing. Bottled water and the containers it is placed in are brought to consumers under full regulation of Health Canada. This regulatory oversight, reinforced with strong industry standards, ensures that consumers will receive a clean, safe product each time they enjoy a serving of bottled water, whether packaged in glass or plastic.

5. Is bottled water in plastic containers safe to drink?

Yes. The Health Canada investigates the potential toxicity of leaching chemicals and establishes safe levels for any contaminants in bottled water. There is currently no indication that contaminants from leaching or from the water source are a problem in bottled water.

In January 2007, the European Food Safety Authority (EFSA) summarizes a weight of the evidence evaluation of low-dose reproductive and developmental effects of bisphenol A (BPA). BPA is used to make polycarbonate plastic; 18 litre plastic bottles commonly used in water coolers are made from polycarbonate plastic. The EFSA convened an expert scientific panel to evaluate the weight of evidence for low-dose reproductive and developmental effects of BPA. In their overall conclusion after reviewing some 200 scientific papers published since 2002, was that Bisphenol A does not pose a risk to human health at the trace levels present in consumer products.

The full details of the study available on the EFSA's Web site at:

http://www.efsa.europa.eu/en/science/afc/afc_opinions/Bisphenol_a.html.

6. I heard that a study on animal cages and water bottles made from polycarbonate plastics became dangerous after they were scrubbed. Aren't watercooler bottles cleaned for re-use?

Bottled watercooler containers are cleaned and sanitized in accordance with guidelines as dictated by Health Canada's Good Manufacturing Practices (GMP's). These include specifics related to cleaning agents used, water/rinse temperature and duration. These containers are cleaned and sanitized on specialized equipment designed specifically for that purpose. The methods and materials used in the study would not be utilized in a bottled water plant. For instance, researchers conducting the study mistakenly used a highly caustic floor cleaning detergent that would not be used to clean and sanitize bottled watercooler containers.

7. Are products made with bisphenol A safe to use?

Yes. Claims of adverse health effects in laboratory animals at extremely low doses are based on small, unvalidated studies. Much larger, more comprehensive studies by several different research groups in the United States and Japan failed to show any adverse effects after exposure of laboratory animals to low doses of bisphenol A over multiple generations. These studies follow internationally accepted guidelines for conducting toxicity tests and also comply with Good Laboratory Practice requirements to ensure valid results.

Products made from bisphenol A are safe if used as intended because bisphenol A has been highly studied. A large number of studies have been conducted to assess the impact of bisphenol A on human and environmental health. Research has shown that bisphenol A is not a carcinogen, not a reproductive or developmental hazard, and is not bioaccumulative because it is rapidly metabolized and eliminated from the body. In addition, bisphenol A degrades rapidly in the environment. The benefits of bisphenol A as an environmentally friendly food packaging material have proven vitally important to public health.

Assessments of the scientific evidence conducted by government agencies worldwide all confirm that polycarbonate products made from bisphenol-A are safe for use. For example, in January 2006, the German Federal Institute for Risk Assessment (known as BFR), which is the German expert body responsible for opinions on food safety and consumer health protection, released a statement with their views of the safety of polycarbonate baby bottles. Overall they noted that, "BFR does not recognize any health risk for babies that are fed from baby bottles made of polycarbonate."

8. If I eat or drink something that was contained in a plastic container that was made with bisphenol A will I harm my health?

No. Recently, a scientific evaluation of bisphenol A was published by Professor Michael Kamrin, Professor Emeritus at Michigan State University. After systematic evaluation of the extensive scientific literature on bisphenol A, Professor Kamrin concluded “it is very unlikely that humans, including infants and young children, are at risk from the presence of BPA in consumer products.” Professor Kamrin’s 2004 evaluation is available in the peer-reviewed journal Medscape General Medicine at <http://www.medscape.com/viewarticle/484739?src=search> (free registration required).

After consideration of Professor Kamrin’s evaluation, the American Council on Science and Health, which includes a board of 350 physicians, scientists and policy advisors, concluded “The current, very low levels of exposure to bisphenol A from plastic bottles and other consumer products do not pose a hazard to human health.” The Council’s views on bisphenol A are available at http://www.acsh.org/publications/pubID.1033/pub_detail.asp.

There is no known evidence of any effect on human health from exposure to bisphenol A resulting from consumer uses of products made from polycarbonate plastic. Polycarbonate food and beverage containers, as well as other consumer products made from polycarbonate, are safe for their intended uses.

9. How does Health Canada regulate bisphenol A?

Plastic food and beverage containers, including polycarbonate plastic made with bisphenol A, meet or exceed all requirements of the Health Canada which regulates food packaging to assure its safety.

Health Canada clears food-contact plastics for their intended use based on migration and safety data. The clearance process includes stringent requirements for estimating the levels at which such materials may transfer to the diet. Health Canada's safety criteria require extensive toxicity testing for any substance that may be ingested at more than negligible levels. This means Health Canada has affirmatively determined that, when cleared plastics are used as intended in food-contact applications, the nature and amount of substances that may migrate, if any, are safe.

Health Canada has announced an assessment of bisphenol A among approximately 200 other chemicals. CBWA welcomes the science based assessment of bisphenol A by Health Canada and their decision based on an analysis of all the relevant science.

10. What does the code found on the bottom of a container indicate?

Many plastic items are marked with a Resin ID code – usually a number (1 through 7) or a letter abbreviation – which indicates a particular type of plastic. The code is typically found on the bottom of a container and is often displayed inside a three-arrow recycling symbol. The codes help facilitate the recovery of post consumer plastics.

The Resin Identification Code System was introduced in 1998 by The Society of Plastics Industry, Inc. (SPI) at the request of recyclers around the country. A growing number of communities were implementing recycling programs in an effort to decrease the volume of waste subject to rising tipping fees at landfills. In some cases, test programs were driven by state-level recycling mandates.

The SPI code was developed to meet recyclers' needs while providing manufacturers a consistent, uniform system that could apply nationwide. Because municipal recycling programs traditionally have targeted packaging - primarily containers - the SPI coding system offered a means of identifying the resin content of bottles and containers commonly found in the residential waste stream.

Recycling firms have varying standards for the plastics they accept. Some firms may require that the plastics be sorted by type and separated from other recyclables; some may specify that mixed plastics are acceptable if they are separated from other recyclables; while others may accept all material mixed together. Not all types of plastics are generally recycled, and recycling facilities may not be available in some areas. To this day, the Resin Identification Code System helps sorters separate basic types of plastics for recycling, and provides manufactures with a consistent, uniform identification system that's applied nationwide.

Here's what the numbers represent:

- #1 - Polyethylene Terephthalate (PET)
- #2 - High Density Polyethylene (HDPE)
- #3 - Vinyl (Polyvinyl Chloride or PVC)
- #4 - Low Density Polyethylene (LDPE)
- #5 - Polypropylene (PP)
- #6 - Polystyrene (PS)
- #7 - Other (which commonly includes: Polycarbonate, ABS, Nylon, Acrylic or a composite of 2 or more resins)

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The Canadian Bottled Water Association (CBWA) is the authoritative source of information about all types of bottled waters. Founded in 1992, CBWA's membership includes Canadian bottlers, distributors and suppliers. CBWA is committed to working with Health Canada, which regulates bottled water as a packaged food product, and provincial governments to set stringent standards for safe, high quality bottled water products. Additionally, CBWA requires member bottlers to adhere to the CBWA Bottled Water Model Code, which mandates additional standards and practices, which in some cases, are more stringent than federal and provincial regulations. A key feature of the CBWA Bottled Water Model Code is an annual unannounced plant inspection by an independent, third party organization. For more information about CBWA, bottled water and a list of member's brands, please contact Elizabeth Griswold, CBWA Executive Director at 905.886.6928 or griswold@cbwa.ca.