

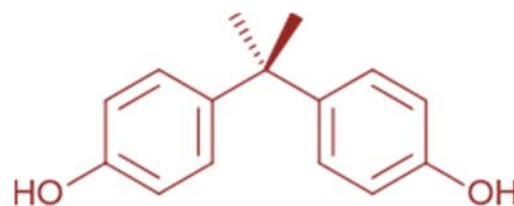
Bisphenol A (BPA)

Bisphenol A (BPA) has been announced as the endocrine disrupting chemicals by Japan Ministry of the Environment. Since the 1930s, BPA was widely used in industry and daily necessities. BPA is mainly used as a monomer in the manufacture of polycarbonates and epoxy resins. Polycarbonate is used to make food containers such as reusable beverage bottles, infant feeding bottles, tableware, microwave ovenware and storage containers including reservoirs for water dispensers. Epoxy resin is used to make protective coatings and linings for food and beverage cans and vats. BPA is also used in a variety of non-food applications: medical, sealants used in dentistry, paints, inks, thermal paper, retardants, CD/DVD, electronic equipment. BPA is allowed to use in food contact plastics in the European Union with a specific migration limit of 0.6 mg/kg in 2002, and restriction of use in plastic infant feeding bottles in 2011. And even some Member States have banned children's food containers or all food containers containing BPA. Taiwan EPA has classified BPA as Class 4 toxic chemical for management in 2009. Taiwan FDA has prohibited the use of BPA in plastic infant feeding bottles, and allowed to use in PC plastic food utensils, containers, and packaging with a limit level for dissolution of 0.6 ppm in 2013. Although lots of research have found trace amounts of BPA in the environmental media, food and human samples, the current risk of BPA dietary exposure in general population was far below the acceptable risk by worldwide scientific report and Taiwan FDA evaluation. Therefore, there is no health concern for Taiwanese.



Q : Does BPA exist in our environment?

A : Many surveys have found that BPA does exist in the environment. BPA is main used as a monomer in the manufacture of polycarbonates and epoxy resins, and widely used in industry and daily necessities. BPA enter our environment during their manufacturing, usage, and discard of consumer products. Therefore, BPA could widely exist in river water, sea water, sediment, soil, air, and dust.



Q : How can BPA affect my health?

A : Only few studies have been published on the toxicities and health hazards of BPAs in experimental animals, but lack of epidemiological studies for human. Based on studies, the major BPA adverse effect on the reproductive and endocrine system were reported.

Q : How likely are BPA to cause cancer?

A : So far, the scientific evidence shows it is unlikely that BPA will cause carcinogenic hazard. BPA has not been classified by the International Agency for Research on Cancer (IARC) as human carcinogen.

Q : How might I be exposed to BPA?

A : BPA enter our environment during their manufacture, use, and discard of consumer products. People may be exposed to BPA from food, drinking water, dust, and non-food applications, such as thermal paper, toys, sealants used in dentistry, and electronic product. According to the risk assessment report of European Food Safety Authority, In general dietary is the main source of exposure to BPA. In children under the age of three years, dust was the second larger source of external exposure to BPA.

Q : Which kinds of food have higher or lower level BPA?

A : According to the foodstuff monitoring of BPA by Taiwan FDA, the higher BPA concentrations was found in metal canned foods. The BPA levels measured in non-canned foods and vegetables were lower.

Q : What BPA levels in food are considered safe?

A : Due to lack of scientific evidence that BPA may affect human health, there is no maximum residual limit or safety level proposed by World Health Organization, European Food Safety Authority, or developed countries.

Q : If we expose to higher level BPA from food intake?

A : According to the foodstuff monitoring of BPA by Taiwan FDA, the exposure dose in all age groups in present study were lower than the temporary Tolerable Daily Intake (t-TDI), established by European Food Safety Authority. The current dietary exposure to BPA in Taiwanese was unlikely to cause undesirable or harmful health effects. People do not need to worry excessively.

Q : How can I prevent or reduce BPA from food intake?

A : (1) Eat fresh or frozen foods. Reduce the usage of metal canned foods.
(2)When possible, select for glass, porcelain, or stainless steel containers, particularly for hot food or liquids.
(3)When metal canned food is heated, the food should be taken out and heated by glass, ceramic or stainless steel containers. Do not heat the metal cans in water or directly, to prevent BPA dissolution into foods.
(4)Taiwan has prohibited to use BPA in the manufacture of infant feeding bottles. Recommended that people choose qualified products, to avoid the purchase of goods of unknown origin. Look for pacifiers, spill-proof cups, food utensils or containers, and toys those are labeled BPA free, avoid polycarbonate products.
(5) For toddler, indoor dust ingestion may be the major source of BPA inferior to food consumption. Teaching your child not to eat soil or mud, and not to put fingers into their mouth. Thoroughly washing hands is one of the most effective ways to prevent dust exposure.
(6) A balanced diet, randomize the purchasing source of your food, and don't eat the same food every day, to reduce the risk of BPA accumulation in body.

Q : Is there a medical test to show whether I've been exposed to BPA?

A : Some laboratories with well-equipped and advanced technology can measure BPA in blood, urine, and breast milk in Taiwan. Those tests can identify whether you have been exposed to high levels of BPA, but can't tell you the actual harmful effects may occur. We suggest you ask a physician to judge whether the test is necessary.

Editor: *Research Center for Environmental Trace Toxic Substances, National Cheng Kung University*

Advisor: *Food and Drug Administration, Ministry of Health and Welfare*

