

## HOW SAFE IS OUR KITCHENWARE MADE OF PLASTICS

D. Kalyani, P.Nirmala Kumari,

Department of Mathematics, Govt. Degree College for Women, Guntur- AP

\*Corresponding author: Email: [satyakalyani27@gmail.com](mailto:satyakalyani27@gmail.com)

### ABSTRACT

Our food, it seems, is always touching plastic. Plastics play a part in every phase of food production and preparation. Food gets processed on plastic equipment, and packaged and shipped in plastic-lined boxes and cans. At home we store and reheat the leftovers in plastic containers. Recent health controversies have spawned new discussions about the safety of plastics in the food industry. In particular, research that's found potential health risks from bisphenol A (BPA). It's long been known that infinitesimal bits of plastic get into our food from containers. The process is called "leaching" or "migration." The chemical industry acknowledges that you can't avoid this transfer. Heating food in plastic seems to increase the amount that's transferred to food. Migration also increases when plastic touches fatty, salty, or acidic foods. The ill effects of the usage of plastic food containers is discussed in this paper.

**KEY WORDS:** Plastic food containers, Poly carbonate, Bisphenol A , Estrogenic Activity (EA), Recycling symbols

### INTRODUCTION:

Research says that keeping water in plastic bottles causes the plastic to leach. Leaching means that some of the chemicals of the plastic enter the water. Use of plastic bottles for a long time and repeated washing increases the chances of leaching. Of these particles BPA or Bisphenol A leached is said to be carcinogenic in nature (meaning, capable of causing cancer) and harmful to the human body.

Recent research by the National Toxicology program, (Toxicology is a branch of biology and medicine that studies the adverse effects of chemicals) a division of National Institute of Health, US says that BPA present in some plastic bottles may disturb the hormonal balance in the body by mimicking estrogen or female hormone. It may cause breast cancer and uterine cancer in women and prostate cancer and decreased testosterone (the sex hormone) in men. It may also affect unborn babies. Other research points to increase in insulin resistance and Type 2 diabetes.

Bisphenol A (BPA) is a material used in hard, lightweight plastics called polycarbonates. Some baby bottles and water bottles are made from bisphenol A. BPA is a chemical that has been used to harden plastics. It is a carbon-based synthetic compound with the chemical formula  $(\text{CH}_3)_2\text{C}(\text{C}_6\text{H}_4\text{OH})_2$  belonging to the group of diphenylmethanederivatives and bisphenols, with two hydroxyphenyl groups. It is a colorless solid that is soluble in organic solvents, but poorly soluble in water and has been in commercial use since 1957.

Our homes are full of plastic, and the kitchen is no exception. There has been a lot of talk about what plastic is safe to reuse, and what is not. There are different sorts of plastic, used for different purposes. They are categorized in accordance with what raw material was used to produce the product. Here are the different categories:

Know the code. Look on the bottom of your plastic to find the recycling symbol (a number between 1 and 7 enclosed in a triangle of arrows). The code indicates the type of plastic you are using and can give you important clues about safety. "We generally say 1, 2, 4 and 5 are considered to be the safest," says Sonya Lunder, senior analyst at the Environmental Working Group. Try to avoid using plastics with 3 or 6, as these leach chemicals that may be harmful. Number 7 is an "other" category that includes BPA-containing plastics called polycarbonates. These plastics, which you should avoid, will have the letters PC printed underneath the 7.

BPA concerns us because it has Estrogenic Activity (EA), meaning it mimics the hormone estrogen in the body. According to the study authors, chemicals with EA have been linked to all kinds of health problems, including *early puberty in females, reduced sperm counts, altered functions of reproductive organs, obesity, altered sex-specific behaviors, and increased rates of some breast, ovarian, testicular, and prostate cancers.*

The insides of food cans are often lined with an epoxy resin that keeps corroding metal away from the food. But bisphenol A in that resin can migrate into the foods; in fact, it's the major source of our exposure to the chemical. Exposure to the small amounts of BPA that migrate from containers into the food they hold is not dangerous. But when it exceeds the limit causes : Disrupting normal hormone levels and development in fetuses, babies, and children, Brain and behavior problems in infants and young children, increased risk of cancer, heart problems, obesity, diabetes, Lower sperm counts and other reproductive abnormalities, Early puberty and many more health problems. Most soda bottles—are OK to use once, but can leach carcinogenic, hormone-disrupting phthalates when used over and over again. Take-out restaurant orders often come in polystyrene containers, which also should be emptied into safer containers once you get them home. The Bisleri, Fanta, 7-Up and all other popular drinks' bottles that you have carefully cleaned and filled with water at home can harm you.

### 2. METHODOLOGY:

The samples of Plastic kitchenware in the super markets are observed. Information is collected from the ladies who visit these super markets to purchase the plastic containers, the purpose for which they use and the observed health problems in their families. Different reports of the effects of plastic usage are studied.



**LDPETE:** Polyethylene terephthalate ethylene, used for soft drink, juice, water, detergent, cleaner and peanut butter containers.



**HDPE:** High-density polyethylene, used in opaque plastic milk and water jugs, bleach, detergent and shampoo bottles and some plastic bags.



**PVC or V:** Polyvinyl chloride, used for cling wrap, some plastic squeeze bottles, cooking oil and peanut butter jars, detergent and window cleaner bottles.



**LDPE:** Low density polyethylene, used in grocery store bags, most plastic wraps and some bottles.



**PP:** Polypropylene, used in most deli soup, syrup and yogurt containers, straws and other clouded plastic containers, including baby bottles.



**PS:** Polystyrene, used in Styrofoam food trays, egg cartons, disposable cups and bowls, carryout containers and opaque plastic cutlery.



**Other:** Usually polycarbonate, used in most plastic baby bottles, 5-gallon water bottles, "sport" water bottles, metal food can liners, clear plastic "sippy" cups and some clear plastic cutlery.

New bio-based plastics may also be labeled #7.

### 3. RESULTS AND DISCUSSION:

Which plastics are safe? I get that question all the time. The Internet is full of charts listing the numbers of the various types of plastic and explaining which ones are safe and which ones are not. Supposedly, #2 (high density polyethylene), #4 (low density polyethylene), and #5 (polypropylene) are safe, right? Does that mean the lid on my travel mug is safe? It's #5 polypropylene.

We're supposed to avoid plastics #3 (PVC), #6 (polystyrene), and #7 (polycarbonate). Polycarbonate is the plastic that is made from the chemical Bisphenol-A (BPA). Walk down the aisles of any drug store these days, and you'll find rows of plastic products labelled BPA-Free. In fact, entire shelves of baby products are labelled BPA-free. Are they safe? Plastic #1 (polyethylene terephthalate), the type of plastic that disposable water bottles are made of, is not made with BPA either. Is it okay to drink from? we can't be sure any plastic is safe as long as we don't know what chemicals are in the plastic and as long as those chemicals have not been tested. Now, a University of Texas study published last month in *Environmental Health Perspectives* confirms that hormone-disrupting chemicals leach from almost *all* plastics, even BPA-free plastics.

### 4. CONCLUSION:

Do not microwave in any kind of plastic, including Tupperware. No matter what their products say about being "microwave safe". Use only glass vessels for microwave. Clean your bottle with mild detergent and warm water thoroughly after every few uses. But the best option again is to use it for a short span of time and then replace as cleaning it repeatedly causes leaching. Don't re-use the Plastic Bottles of Packaged water and soda water. These bottles are supposed to be for a single use and it is better that we heed the advice. The options for those on the move are HDPE (No.2) bottles or Steel bottles which are very popular today with their sleek look and pretty light weight. The safest option is to specifically look out for bottles which are BPA free. Try avoiding drinking from plastic bottles all the time. At least have another non-plastic collecting vessel for water at home like earthen pots, brass or copper pots and steel. Make sure you do not use bottles that are having no. 3, no. 6 or no. 7 symbol at the bottom.

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