GOVERNMENT OF DUBAI

DUBAI MUNICIPALITY

BPA FREE FUTURE

P1-1

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Abstract

Plastic has become a part of daily human activities. However, the use of plastic packaging can pose a threat to humans if they remain ignorant about the presence of certain harmful chemical compounds in plastic. The primary source of exposure for most people is through diet. **Bisphenol A** (BPA) is one of the most thoroughly tested chemicals in use today and has a safety track record of more than 50 years. In addition, the European Food Safety Authority recently released findings that the harmful effects of BPA exposure can occur at levels 100,000 lower than previously thought. In order to verify the compliance, it is necessary to perform tests, both for plastic materials and objects. Food contact material testing lab in Dubai Central Laboratory is conducting quantitative determination of BPA, BADGE and BFDGE by using HPLC with florescence detector. The specific migration tests and the expression of results are perform according to the standards established in the Regulation 10/2011. In the present study, >200 samples conducted for BPA determination including children's water bottles, snacks boxes, lunch boxes, infant feeding bottles, cups, spoons etc.

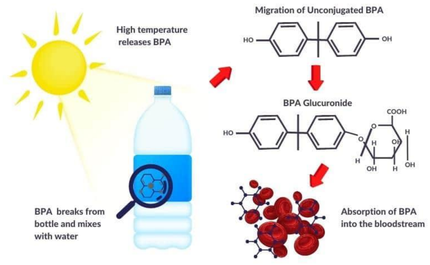
Keywords: BPA, EU, EFSA, Migration, HPLC

Introduction

BPA stands for bisphenol A, an industrial chemical that has been used to make certain plastics and resins since the 1950s. BPA is a key ingredient in **polycarbonate plastic**. Studies have shown that small amounts of BPA can migrate from food packaging and containers into foods and beverages.

BPA is an endocrine disruptor. It can imitate the body's natural hormones and interfere with their function. Pregnant women, infants and young children face the greatest risks. EU Regulation 10/2011 on plastic materials and objects intended to come into contact with food has undergone different modifications since its entry into force. **BPA is not allowed to be used for the manufacture of polycarbonate infant feeding bottles as regulated by (EU) 321/2011**.

What Does BPA Do to Water?



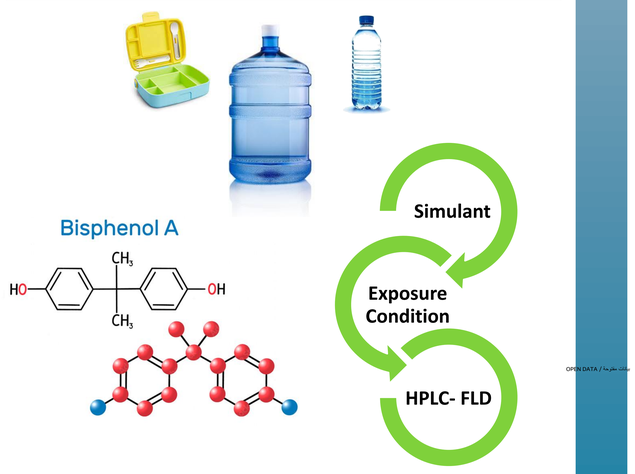
When you drink bottled water containing BPA, you end up drinking small amounts of BPA in your water. Our diets – including the food we eat and the drinks we drink – are the biggest source of BPA.

Methodology

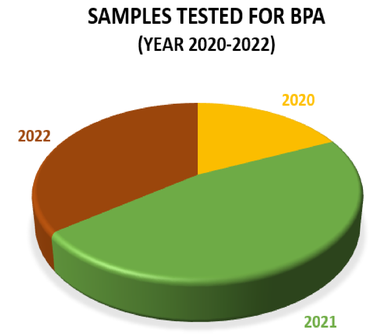
Food contact material samples were tested with an appropriate simulant. Subjected to specific exposure time and temperature. BPA identification and quantification done by HPLC with Florescence detector. Excitation wavelength 275 nm and emission wavelength 313 nm. Mobile phase methanol: water in the ratio 70:30.

List of simulants, Regulation (EC) No. 10/2011.

Food Simulant	Abbreviation	Used for
Ethanol 10% (v/v)	Food simulant A	Aqueous foods
Acetic Acid 3% (w/v)	Food simulant B	Acidic foods
Ethanol 20% (v/v)	Food simulant C	Alcoholic foods
Ethanol 50% (v/v)	Food simulant D1	Fatty foods
Vegetable oil	Food simulant D2	Fatty foods
Poly (2,6-diphenyl-p-phenlyene oxide)	Food simulant E	Dry foods



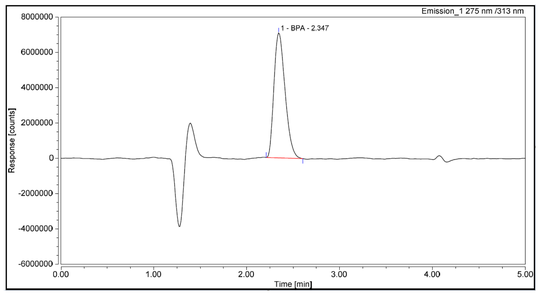
Results & Discussions



Summary of BPA Results		
Number of Samples Tested	**221**	Year (2020-2022)
BPA Free Samples	**212**	Not Detected
BPA Detected Samples	**9**	> LOD
BPA Detected in Infant Bottles	**1**	> MRL

Summary of BPA Results

Chromatogram of a sample, BPA detected

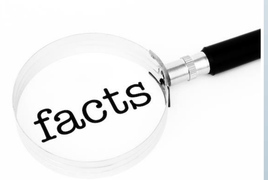


Conclusion

Bisphenol A can leach into food from the protective internal epoxy resin coatings of canned foods and from consumer products such as polycarbonate tableware, food storage containers, water bottles, and baby bottles. The degree to which BPA leaches from polycarbonate bottles into liquid may depend more on the temperature of the liquid or bottle, than the age of the container.

BPA determination in 221 samples shows that **96%** of the tested food contact plastic materials are BPA free. 4% samples only BPA detected. One infant feeding plastic bottle got positive for BPA.

This resin code on a plastic container indicates that **BPA** may have been used in its manufacture.



Recommendations

Use BPA-free products.

Look for products labeled as BPA-free. If a product isn't labeled, keep in mind that some, but not all, plastics marked with recycle code 3 or 7 may contain BPA. Use baby bottles that are BPA free.

Avoid heat.

Don't microwave polycarbonate plastic food containers. Polycarbonate is strong and durable, but over time it may break down from over use at high temperatures and allow BPA to leach into foods.

Focus on fresh whole foods.

When you can, choose fresh whole fruits and vegetables. Processed and packages foods are a common source of BPA.

Use alternatives.

Use glass, porcelain or stainless-steel containers for hot foods and liquids instead of plastic containers. Especially for the infant feeding bottles use glass or steel bottles.

Acknowledgements

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