

# OCCURRENCE OF BISPENOL A AND ANALOGS IN BOTTLED MINERAL WATER: A REVIEW

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## **Abstract**

The group of compounds known as bisphenols is widely used in the manufacture of plastic bottles with the aim of imparting strength, flexibility and stability to the materials. Bisphenol A (BPA) and its analogues are known as endocrine disruptors, with the potential of impairing environment and human health due to its ability to disrupt endocrine systems. Considering that the release of bisphenol from plastics can occur by heating, contact with acids or bases, as well as time of exposure, bottled mineral water can be contaminated by these compounds. Therefore, to assess the risks to human health associated with the presence of these compounds in bottled mineral water, the present investigation applied a systematic review approach covering publications launched during 2012-2022 focused on Bisphenol A and its analogues detected in bottled mineral water. Based on a set of eligibility criteria, 46 scientific papers were selected, including 485 observations reporting the concentrations of BPA and/or its analogues in bottled mineral water. As there are no threshold values for the concentration of bisphenols in water, a maximum limit of BPA and analogs was proposed as acceptable for human consumption. Among all materials used for bottles production, such as polycarbonate (PC), polyethylene terephthalate (PET), polyvinyl chloride (PVC), glass (GL), polypropylene (PP) and polyethylene (PE), mineral water kept in bottles made of PC (the only material containing BPA in its composition) presented an increase in the concentration of BPA with exposure time, showing that the bottle can release this compound into the water. Much lower concentrations of BPA were found in some mineral waters kept in bottles made of PET, PC and GL, which does not have BPA in their compositions, suggesting contamination prior to bottling. In many publications it was observed lack of information about BPA analogues, as well as other relevant variables such as: storage time, bottle material, pH, storage temperature, limit of detection and limit quantification of the method (LOD and LOQ respectively). In conclusion, lack of methodological standardization and lack of information on relevant variables prevent a proper risk assessment to human health associated with the consumption of bottled mineral water.

**Keywords:** Plastic bottle; Bottled mineral water; Bisphenol.