Assessing Bisphenol A (BPA) Risk Management Strategies for Vulnerable Populations in South Africa

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South Africa's BPA risk management for vulnerable populations **remains limited,** even as **biomonitoring and environmental studies confirm health risks**. Aligning with international standards and implementing national monitoring programmes are needed to better protect infants, children, and pregnant women.

BACKGROUND

BPA is an endocrine-disrupting chemical found in consumer and medical care products, posing health risks to infants, children, and pregnant women through various exposure routes[1-3].

In South Africa (SA), BPA exposure is a significant concern due limited regulatory scope, lack of monitoring and enforcement and low public awareness[4,5].

This situational analysis assessed existing BPA risk management strategies for vulnerable populations and identifies opportunities for strengthening local interventions.

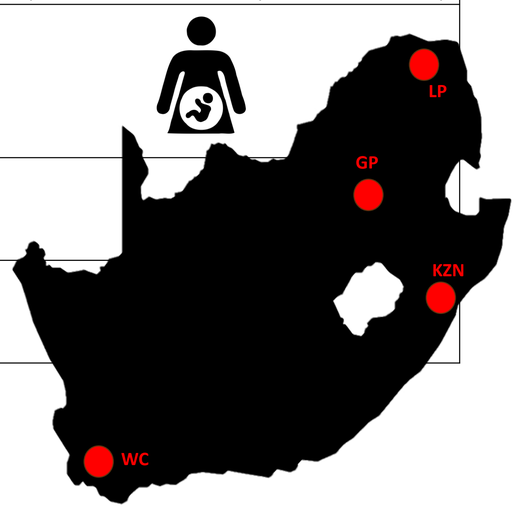
RESULTS

Biomonitoring Studies Detected BPA Across SA:

Table 1: BPA levels in biological samples across South Africa (ng/mL) median (range)

Sample Type	BPA (ng/mL) Median (range)
Breastmilk[8]	**Vhembe (LP):** Free BPA: 0.10 (<MDL – 7.83; Total BPA: 1.03 (<MDL – 18.61)
	Pretoria (GP): Free BPA: 0.17 (<MDL– 7.78); Total BPA: 0.69 (<MDL – 19.38)
Maternal and cord blood samples [6.7] - **Antenatal clinic, Durban (KZN):**	Matern al samples – 1.16 (0.4 − 15.3) Male cord blood – 0.53 (0.4 − 8.3) Female cord blood – 1.09 (0.5 − 13.2)
	Maternal samples – 0.8 (0.4 – 6.4) Cord blood samples – 0.91 (0.4 – 8.0)
Urine[9]	**Drakenstein, Western Cape (WC):** 1.95 (1.14 – 3.57)

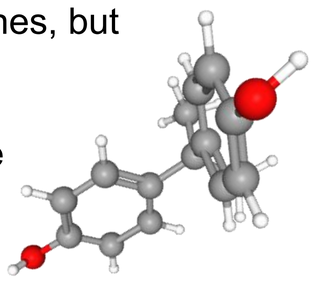
MDL – Method Detection Limit



Higher BPA levels in pregnancy are linked to negative effects on birth weight, cognitive development and foetal Vitamin D levels[7,9,10].

Comparison Of BPA Exposure Limits And Detection Levels: Local Context Vs. International Standards:

- **No local studies or restrictions were found** for BPA in toys and occupational exposure, while the European Union (EU) sets limits of 0.04 mg/L for toys and 2 mg/m³ for occupational exposure[11, 12].
- Though most local studies detecting BPA in some food and food contact material are lower than EU standards, **BPA intake from canned foods** (0.57 µg/kg bw/day) **exceeds** the **EU's tolerable daily intake** (0.2 ng/kg bw/day)[13-16].
- Despite **BPA detected in municipal and surface water** reaching up to 181.28 ng/L and found to be below the EU drinking water limit (2.5 µg/L), they are **linked to poor waste disposal** practices[16-20].
- SA relies on awareness, a ban in infant bottles, and guidelines, but lacks enforceable BPA limits[4, 21].
- Internationally, countries rely on strict limits, comprehensive bans, and mandatory reporting are required[11,12, 22, 23].

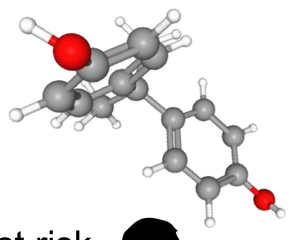


METHODS

A systematic literature review was conducted using Web of Science, Scopus, PubMed, Google Scholar, and grey literature with targeted search strategies. Stakeholder input provided additional data.

The analysis included descriptive statistics to summarise findings, a comparative review guided by the Organisation for Economic Co-operation and Development's "Government Risk Management Approaches to Chemical Safety", and a SWOT framework to assess the effectiveness of SA's BPA risk management strategies.

CONCLUSIONS



- BPA exposure is widespread in SA.
- Infants, children, and pregnant women face the highest risk.
- SA risk management takes a more qualitative approach.
- International standards are risk based.
- Stronger local regulations and monitoring are needed.

KEY RECOMMENDATION:

By April 2026, researchers, academics, and advocacy groups should **develop and promote evidence-based policy briefs (PBs) that advocate for the following**:

- **Ban BPA in food packaging, cosmetics, and medical devices** intended for infants, children, and pregnant women by June 2026, with a 18-24 month phase-out period.
- By end of 2026, establish a **Bisphenols monitoring and safer alternatives research program**, ideally led by a SA Research Chair at a local university, with nationwide monitoring, annual progress reports, postgraduate training, and fostering collaboration.

PBs should be directed to the Department of Health, calling for collaboration with Department of Trade, Industry and Competition, South African Health Products Regulatory Authority, National Research Foundation, Department of Science, Technology and Innovation, South African Medical Research Council and Department of Forestry, Fisheries and the Environment.

ADDITIONAL KEY INFORMATION

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