

# Hormone-mimics in plastic water bottles -- just the tip of the iceberg?

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In an analysis<sup>1</sup> of commercially available mineral waters, the researchers found evidence of estrogenic compounds leaching out of the plastic packaging into the water. What's more, these chemicals are potent in vivo and result in an increased development of embryos in the New Zealand mud snail. These findings, which show for the first time that substances leaching out of plastic food packaging materials act as functional estrogens, are published in Springer's journal *Environmental Science and Pollution Research*.

Wagner and Oehlmann looked at whether the migration of substances from packaging material into foodstuffs contributes to human exposure to man-made hormones. They analyzed 20 brands of mineral water available in Germany - nine bottled in glass, nine bottled in [plastic](#) and two bottled in composite packaging (paperboard boxes coated with an inner plastic film). The researchers took water samples from the bottles and tested them for the presence of [estrogenic chemicals](#) in vitro. They then carried out a reproduction test with the New Zealand [mud snail](#) to determine the source and potency of the [xenoestrogens](#).

They detected estrogen contamination in 60% of the samples (12 of the 20 brands) analyzed. [Mineral waters](#) in glass bottles were less estrogenic than waters in [plastic bottles](#). Specifically, 33% of all mineral waters bottled in glass compared with 78% of waters in plastic bottles and both waters bottled in composite packaging showed significant [hormonal activity](#).

By breeding the New Zealand mud snail in both plastic and glass water bottles, the researchers found more than double the number of embryos in plastic bottles compared with glass bottles. Taken together, these results demonstrate widespread contamination of mineral water with potent man-made estrogens that partly originate from compounds leaching out of the [plastic packaging](#) material.

The authors conclude: "We must have identified just the tip of the iceberg in that plastic packaging may be a major source of xenohormone\* contamination of many other edibles. Our findings provide an insight into the potential exposure to endocrine-disrupting chemicals due to unexpected sources of contamination."

More information: Wagner M & Oehlmann J (2009). Endocrine disruptors in bottled mineral water: total estrogenic burden and migration from plastic bottles. Environ Sci Pollut Res; [10.1007/s11356-009-0107-7]

Source: Springer

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