

Bottled Water in PET – Oestrogenic Activity An Industry View

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PET, supported by independent and industrial research, has been proven to be a safe packaging material for water and other food and beverage items for the past three decades.

The risk of exposure of the population to Endocrine Disrupter Chemicals (EDCs) through packaged mineral water consumption has been the subject of intensive scientific and media interest in recent years. The role of PET packaging has often been the focus of these articles along with other chemicals that are not used in PET manufacture, being identified as potential candidates for hormonal activity from PET packaging.

A recent publication by Wagner et al¹ compares alleged hormonal activity in 14 mineral waters packaged in glass, beverage cartons and PET. The study hypothesises that unknown and unidentified contaminants in PET contribute to hormonal activity in packaged mineral waters. PlasticsEurope's PET HSE expert group has examined these claims and wishes to make the following comments:

- Comparable levels of hormonal activity were measured in glass and PET packaging yet PET alone was singled out as being responsible. This is selective science and implies an anti-plastic agenda.
- Differences in hormonal activity were seen in waters of different origin yet no attempt was made to follow up this observation with comparative data from mineral water samples taken directly from the source. If Wagner et al were really interested in advancing the scientific understanding in this complex discussion he would have undertaken this logical next step.
- The study made no attempt to identify that substances were responsible for the results nor was the possible influence of other materials used in the manufacture and bottling process investigated. Again, these omissions bring into question the methods and motives of Wagner et al.
- In common with other recent studies, substances not used in PET manufacturing were referred to as possible migrants that may contribute to human exposure to EDCs. This basic mistake amounts to uninformed scaremongering unworthy of any serious scientific debate.
- No reference was made to a highly relevant and recent study by Pinto et al² where 90% of the bottled water samples studied did not exhibit any appreciable estrogenic activity. This is a direct contradiction to the Wagner et al claims.
- In their response to criticism from Wagner et al, Forbes et al³ clearly question the robustness, reproducibility and the quality of statistical analysis on previous work carried out by Wagner et al. additionally they state they are disturbed by speculative statements made by Wagner.
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¹ Endocrine disruptors in bottled mineral water: total estrogenic burden and migration from plastic bottles
Martin Wagner & Jörg Wagner, Environ Sci Pollut Res DOI 10.1007/s11356-009-0107-7

² Screening of estrogen-like activity of mineral water stored in PET bottles. Pinto B, Reali D, Int. J. Hyg. Environmental. Health, 212, (2009) 228-232

- In considering the assessment of endocrine effects on humans, in a report for the EU⁴ Wenzel et al, conclude that the even the highest concentrations of endocrine disruption chemicals reported to be present in any drinking water are very unlikely to cause an adverse human health effect.
- Both Wenzel et al and Pinto et al found all hormonal activity to be significantly below that found by Wagner et al.
- The German BfR⁵ has reviewed the Wagner et al study and has commented that in their opinion the results do not support a need for consumers to refrain from drinking mineral water in PET bottles, nor should consumers consider switching to products in glass bottles.

The BfR has called for a rational evaluation of the reported effects of the identification of the responsible contaminants and the analytical definition of the concentrations. It has also suggested that future studies need to identify of the possible routes to contamination. PlasticsEurope fully endorses this proposal.

The recent Wagner et al study on endocrine disruptors in bottled mineral water seems contrary to the established facts. Further work is clearly needed to make sense of this important issue. The PET industry stands by its record of safety and reliability as a packaging material.

³ Response from Forbes et al to Wagner et al. *Ecotoxicology and Environmental Safety* 69 (2008) PP 580 -581

⁴ Study on Endocrine disruptors in drinking water, Final Report ENV.D.1/ETU/2000/0083, A, Müller J, T Ternes, February 26, 2003

⁵ Information No. 006/2009 of the [German] Federal Institute for Risk Assessment [Bundesinstitut für Risikobewertung (BfR)] of March 18, 2009 with respect to a study carried out by the University of Frankfurt am Main