



## Endocrine disruptors in natural mineral water: EFBW position statement

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### *Context*

Scientific studies documenting the widespread occurrence of low levels of endocrine disrupting compounds ('EDC's) in the environment and the food supply have triggered public concern and media attention. Among those are substances of natural origin or of industrial source which are known to be able to bind to estrogen receptors and thus may –theoretically – act in an organism in the same or a similar way as estrogens do. The scientific discussion about it is already going on for years. Up to now there is no clear evidence as to actual influence on humans. A recent study published by the Goethe University of Frankfurt (Germany) reported estrogenic activity in bottled water using in vitro (yeast) and in vivo (snails) models. They compared twenty natural mineral waters bottled in glass, in one-way or re-usable PET as well as in Tetra bricks.

In the in-vitro test, estrogenic activity was found in 12 of the samples analysed. The levels of activity, expressed as equivalent of 17 beta [Annotation: better write the letter as word: beta] – estradiol, were in the range of a few nanograms/litre (= one billionth of a gram per litre or part per trillion – 'ppt') up to 75 ppt as peak value. There were no striking differences between types of packaging. The average level measured was comparable to previously published data obtained in water and food samples. They would represent less than a thousandth of the total estrogens produced endogenously in the body .

In the in vivo test using mudsnails, an increased embryo number was noted in female snails cultured in PET versus glass bottles. There was no obvious concordance with the in vitro data.

No individual EDC's or estrogens were actually identified and measured in the water samples. Therefore no conclusion can be drawn regarding the actual compounds contributing to the estrogenic response of the models. It is therefore not clear to which chemical factor this effect could be linked to. Extrinsic factors could play a role (ex. gas permeation through PET and not through glass).

### ***Position statement***

The study from Goethe University Frankfurt highlights migration from packaging (namely PET) as a significant contributor to the measured estrogenic activity of the tested natural mineral waters. However the results presented are not sufficient to demonstrate such a contribution from the packaging since no compounds were identified, nor measured in the samples, and in addition, similar estrogenic activities were sometimes observed in the same water bottled in either glass or

PET packaging. In the absence of detection and quantification of EDC's or estrogenic substances, the observed estrogenic activity cannot simply be attributed to PET packaging.

PET material has been very broadly used in the industry for decades. It has been validated and approved by all national food safety agencies. It has also been assessed by ILSI the International Life Science Institute. The Institute confirmed that general toxicity and genotoxicity studies on PET indicate that this material does not pose a threat to human health. There is a body of evidence demonstrating that PET shows no estrogenic activity.

PET constitutes a valuable packaging material for bottled waters as well as for a wide variety of food stuffs.

Moreover, as stated before, the level of estrogenic activity detected in the study, if confirmed, would be in the range of nanograms (billionth of a gram per litre). Such activity resulting from the consumption of the tested waters would represent less than a thousandth of the total estrogens produced endogenously in the body **and about one millionth of the allowed EU limit of 60 mg for total migration from packaging** ( Art 2, par. 1 of Directive 2002/72/EC of 2002-08-06 [amended by Dir. 2008/39/EC of 2008-06-03]) and therefore does not represent a health concern.

EFBW members are proud of the quality of their products and strive to ensure their safety for all consumers. To this end, the bottled water industry continuously monitors its products and packaging materials and strictly abides by all the applicable regulations, including migrants from packaging.

In addition, no packaging material is ever used that has not been extensively tested for safety and is approved for use by all competent Authorities.

All bottled waters sold by EFBW members are safe for consumption.

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