New life cycle assessment by IFEU Institute sees beverage carton ahead of PET bottle

Wiesbaden, 26th October 2006 – A new life cycle assessment (LCA) conducted by the IFEU Institute in Heidelberg has confirmed the ecological benefits of the beverage carton: in a direct comparison against disposable PET bottles, the study indicates that "with all packaging systems compared, environmental advantages are evident." "The results show that beverage cartons are rightly classified by the German Federal Environment Agency (UBA) as an 'ecologically advantageous' packaging system and hence, exempt from the mandatory deposit", states Dr. Wilhelm Wallmann, Managing Director of the German Association of Beverage Carton Manufacturers (FKN).

The FKN commissioned the study because in recent years many new packaging systems have been launched on the market. Moreover, the regulations on deposits under the Packaging Ordinance have caused a substantial stir within the beverages and packaging markets: "At the time of announcing the results of the last UBA life cycle assessment four years ago, the PET bottle did not play a role in the fruit juice based segment. In the interim, PET bottles have largely displaced reusable and disposable glass bottles in the market and are increasingly competing against beverage cartons", says the Managing Director of the FKN. A similar trend in the sector for milk drinks cannot be excluded. Consequently, it was time for "a new ecological stock-taking with up-to-date information".

Environmental optimisation potential of PET taken into account

The study assessed beverage cartons and PET bottles with fill volumes of 0.2 to 1.5 litres for fruit juice, fruit nectars, ice tea, milk-mix drinks and fresh milk with various shelf lives. Only packaging systems available on the German market in 2005 were investigated. With regard to beverage cartons, all varieties were considered in relation to their respective market shares. Hence, the study represented the overall market situation.

Moreover, technologically conceivable improvements to PET bottles, e.g. reduced bottle weights, were simulated in a "future scenario 2010" and compared against current beverage cartons. Adds Wallmann: "With this conservative balance of 'old against new' we wanted to be sure of remaining on the safe side". A further "future scenario" concerned

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the 1-litre PET milk bottle, which cannot currently be purchased in Germany, but which is offered in a number of neighbouring countries.

Beverage cartons have clear advantages in terms of the global warming and energy consumption

The study differentiated between packaging systems having different barrier properties. For example, packaging systems for sensitive products such as fruit juices largely prevent the penetration of light and atmospheric oxygen into the product and provide shelf lives of up to 12 months. In beverage cartons, aluminium foil is used for this purpose. Plastic bottles are made of several layers or are coated. Due to their greater material consumption, these packaging systems generally score lower in the LCA than those with a more modest barrier effect. This applies, for example, to packaging systems for ice tea and fresh milk products.

For 1-litre packaging systems for fruit-based drinks with long minimum shelf lives, the beverage carton performs more favourably than the plastic bottle in six of the eight impact categories. Smaller packaging formats present a similar picture. According to the authors of the study, “Noteworthy are the substantial differences in the global warming and fossil resource consumption “. The ecological importance of these impact categories is classified by the UBA as being “very high” and “high”. The differences for the 1.5-litre ice tea packaging systems are not so clear-cut, where so-called “PET monolayer bottles” without barrier properties are employed.

Comparison of packaging systems for milk-mix drinks with short minimum shelf lives showed that in all impact categories, the beverage carton is ecologically more favourable, with the exception of aquatic eutrophication and space requirements forest. A similar picture is presented for fresh milk. Here again, the team of authors put particular emphasis on establishing: “With regard to the global warming and fossil resource consumption, the system differences between the carton and PET bottle are more pronounced than is the case of packaging systems for juices and ice tea.“

Background:

The final report entitled “Life cycle assessment of beverage cartons and disposable PET bottles” was submitted by the IFEU - Institut für Energie und Umweltforschung Heidelberg GmbH in August 2006. The study was commissioned by the FKN in Wiesbaden. FKN represents the interests of manufacturers of beverage cartons (Tetra Pak GmbH & Co., SIG Combibloc GmbH, Elopak GmbH). The study complied with international requirements of the ISO standards series14040-14043 and was subjected to a critical review. The chairman of the review panel was Paul W. Gilgen (Dipl. Univ.-Chemiker (MSc.) of the EMPA (Eidgenössische Materialprüfungs- und Forschungsanstalt). The methodology assessment methods adopted were similar to those used in the LCA studies carried out by the UBA. The supervisory project group included representatives from the filling sector (Campina GmbH & Co.KG, Emig GmbH & Co. KG) and waste disposal sector (DSD GmbH). Unfortunately no industrial association representative from the polymers industry was available to participate as a member of the supervisory project group.