Committee on TOXICITY

COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD, CONSUMER PRODUCTS AND THE ENVIRONMENT

COT STATEMENT ON DIETARY EXPOSURE TO PHTHALATES – DATA FROM THE TOTAL DIET STUDY (TDS): LAY SUMMARY

Background

Phthalates (phthalic acid esters) are chemical compounds made from phthalic acid. They have a wide variety of industrial uses that include the manufacture of household and consumer goods such as lubricating oils, solvents, personal care products and food packaging.

Phthalates may occur in food because of their widespread presence as environmental contaminants and through their release from plastic food packaging. Phthalates can interact with the hormonal (endocrine) control systems of the body, and in particular those that regulate reproductive function.

In the EU, there is legislation to ensure that materials which come into contact with food (directly or indirectly) do not transfer to food in quantities large enough to endanger human health. EU law limits the use of certain phthalates in plastics that come into contact with food, with specific restrictions on the maximum amount that can transfer (migrate) into foods.

The safety of dietary exposure to phthalates has previously been evaluated by several independent scientific committees, including the COT.

Introduction

A recent Food Standards Agency funded study looked for the presence of phthalates in food samples collected as part of the 2007 Total Diet Study (TDS).

The TDS survey involves the collection of over one hundred types of food from normal retail outlets in twenty four towns across the UK. These food samples represent the average UK diet. The sampled foods are prepared according to normal domestic practice and are then analysed to determine the levels of various different chemicals.

The Committee was invited to consider the potential risk to consumers from dietary exposures to phthalates estimated from the 2007 TDS samples, and to advise whether the levels detected in foods were a health concern.

Results

Of the twenty six different phthalates that were looked for in the TDS samples, only eight were detected. These were:

- Diethyl phthalate (DEP)
- Di-isobutyl phthalate (DiBP)
- Di-n-butyl phthalate (DBP)
- Benzyl butyl phthalate (BBP)
- Dicyclohexyl phthalate (DCHP)
- Di-(2-ethylhexyl) phthalate (DEHP)
- Monobutyl phthalate (MBP)
- Mono-(2-ethylhexyl) phthalate (MEHP)

For each compound, we estimated the highest dietary exposures that might occur in different age groups, and compared them to the corresponding Tolerable Daily Intake (TDI) where available. A TDI is the amount of a contaminant that would not be expected to cause appreciable harm in consumers, even if eaten every day, over a whole lifetime. The estimates of dietary exposure were made by combining the measured concentrations of phthalates in different foods with data on patterns of consumption of those foods from the National Diet and Nutrition Survey (NDNS).

The highest estimated exposures were for toddlers aged between 1½ and 2½ years. The Committee noted that in practice, exposures were likely to be much lower than those estimated, since the assumptions made in the exposure calculation were highly conservative.

Intakes of DBP, DEHP, BBP and DEP, estimated from the levels found in the 2007 TDS food samples, were all below their respective TDIs and did not indicate a risk to human health from dietary exposure.

To assess the risk from total dietary exposure to phthalates (i.e. from the combination of all phthalates in the diet), the Committee assumed that the toxic effects of each individual phthalate would be similar, and that the combined toxic effect for a mix of phthalates could be estimated by adding together the exposure estimates for individual compounds.

The Committee compared an estimate of the highest total exposures to all phthalates with the lowest TDI for any of the individual compounds (which was for

DBP). The estimated total phthalate exposure was approximately twice the TDI for DBP. The Committee considered this did not indicate a concern for health since a) most of the phthalates are less potent than DBP, b) the TDI for DBP was likely to be very conservative, and c) DBP accounted for only approximately 5% of the total exposure to phthalates.

Conclusion

Overall the Committee concluded that levels of phthalates found in samples from the 2007 TDS did not indicate a risk to human health from dietary exposure alone. However other, non-dietary, sources of exposure would need to be considered in a full risk assessment for phthalates.

The full COT statement can be found at:
http://cot.food.gov.uk/pdfs/cotstatementphthalates201104.pdf

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