Bottle-Fed Infants Most at Risk for Bisphenol A Ingestion, But Exposure Levels Well Below “Safe” Limits

European Study Suggests Bottle-Fed Infants Most at Risk for Bisphenol A Ingestion, but Exposure Levels Well Below “Safe” Limits. Study reviews more exposure pathways than previous surveys, also concludes additional research needed on production processes for canned soup, canned meat.

Washington D.C. -- Swiss researchers examining exposure pathways for a common chemical used in plastic containers and linings of cans find infants have the highest estimated levels of Bisphenol A (BPA), with exposures falling with rising age. While estimated levels are well below the Tolerable Daily Intake (TDI) set by European authorities, the findings are important in that BPA is thought to impact human development and is classified as an endocrine disrupting chemical, potentially putting developing infants at risk, as well as fetuses if pregnant mothers are exposed.

The Swiss study examines 17 different sources of potential exposure across nine age/gender groups in the German/Swiss/Austrian population and found the most potentially exposed group is bottle-fed infants from 0-6 months of age. This group had estimated mean dose rates of nearly 0.8 micrograms per kilogram body weight per day, well below the TDI. However “it is of the same order of magnitude as recently reported concentrations that caused low-dose health effects in rodents,” according to the authors.

“In general humans in their developmental stages (fetus, infant, child) seem to be exposed more severely than adults,” wrote author Natalie von Goetz, Ph.D., senior scientist at the Swiss Federal Institute of Technology in Zurich, along with colleagues Matthias Wormuth, Martin Scheringer, and Konrad Hungerbuehler.

The European Union’s TDI for BPA is 50 micrograms per kilogram body weight per day, identical to the risk limit set by the U.S. Environmental Protection Agency (EPA). EPA and the U.S. Food and Drug Administration announced in January they are fast-tracking studies to clarify the research on low-dose effects of BPA exposure.
The study “Bisphenol A: How the Most Relevant Exposure Sources Contribute to Total Consumer Exposure” appears in the March issue of the journal *Risk Analysis* published by the Society for Risk Analysis.

The researchers detail the relative contributions of the most relevant exposure pathways to arrive at estimates of total consumer exposure, while past studies often focused on single pathways. To date, information on the relative contribution of the different pathways to total consumer exposure is lacking, but is key for managing substance-associated risks. Drawing on studies of how polycarbonate bottles and containers tend to leach more chemicals the more they are heated, the study determines from these and other research the main source of BPA for all consumer groups is food, although some is found in ambient air, drinking water from pipes sealed with epoxy, and as a result of dental surgery, among other sources. For adults, the highest dose comes from canned foods.

The highest uncertainty associated with the assessment lies in assumptions made on the consumption of packaged food. Consequently, the researchers focused on deriving realistic mean intake values from a range of different studies in order to first discriminate the different BPA sources.

The authors call for more research on finding substitutes for these uses. The findings on dose rates for all consumers were found to closely correspond to global biomonitoring studies that measured BPA in humans, including surveys performed in the United States.

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