



September 10, 2025

Dockets Management Staff (HFA-305)
Food and Drug Administration
5630 Fishers Lane, Room 1061
Rockville, MD 20852

Re: Docket No. FDA-2025-N-1134, Infant Formula Nutrient Requirements; Request for Information

To Whom It May Concern,

The American Society for Nutrition (ASN) appreciates the opportunity to respond to the Request for Information (RFI) on Infant Formula Nutrient Requirements. Established in 1928, ASN is a not-for-profit organization dedicated to the mission of advancing the science, education, and practice of nutrition. ASN has more than 8,000 members around the world, working throughout government, clinical practice, academia, and industry, to conduct research to achieve the ASN vision of “A Healthier World Through Evidence-Based Nutrition.”

ASN supports the agency’s efforts to gain information necessary to reassess and enhance infant formula composition while maintaining safety. This RFI will hopefully lead to a comprehensive assessment by an independent panel to consider which nutrients and other substances and their amounts should be included in infant formula for both preterm and full-term infants. While this RFI addresses non-exempt formulas only, exempt formulas should be reassessed by the FDA following this evaluation, including specific nutrient requirements for formulas tailored for premature infants.

Infants have distinct nutrient needs and vulnerabilities that are best met by human milk during this critical period of development with both short- and long-term health consequences. While ongoing support for breastfeeding by the U.S. Department of Health and Human Services (HHS) is critical, infant formula is often given to infants in tandem with breastfeeding or it may be the sole source of nutrition for infants in the United States. As such, all infant formulas must be nutritionally complete and mimic human milk to the extent possible and be assured to be safe. In conjunction with this RFI, there is a need for ongoing research and evidence that highlights the unique nutrient needs of infants who receive both human milk and infant formula, as mixed feeding is a common practice in the U.S.

ASN Responses to Select Questions from the Request for Information are Bolded Below

1. What new scientific data or information since the 1998 comprehensive assessment (Ref. 1) should we consider regarding nutrient requirements for healthy, full-term infants that are associated with positive short- and/or long-term health outcomes?

Nutrient standards for infant formulas vary greatly around the world, as new scientific information on infant formula nutrient needs has emerged and other countries have updated standards for certain nutrients accordingly. FDA should use this review period to explore harmonized infant formula nutrient requirements and consider adopting global nutrient standards if possible, aligning with other countries' nutrient recommendations for infant formulas or with those of global standard setting bodies, such as the Codex Alimentarius Commission¹. Moving forward, ongoing reviews of infant formula nutrient requirements should take place on a more regular basis as the science continues to evolve to maintain the highest standards for infant formulas.

A paper “FDA Expert Panel on Infant Formula “Operation Stork Speed” June 2025: Part 1, Nutrient Considerations²” highlights the significant scientific data that have emerged since 1998 within its citation list, as does the citation list for a Perspective article³, “Is It Time to Revise the Current Nutrient Requirements for Infant Formulas Principally Established in 1980?.” New data highlighted includes:

- new infant growth standards based on exclusively breastfed infants: the Centers for Disease Control and Prevention 2000 growth reference⁴ and the 2006 WHO/CDC growth standard for children <24 months⁵;
- the observation that breastfed infants gain weight more slowly than formula-fed counterparts;
- the protective effects of breastfeeding against long-term obesity risk;
- emerging evidence linking high protein intake during infancy to later obesity risk; and
- observations that lower-protein formulas, in the range of human milk, do not increase malnutrition risk.

Expert groups have recommended a narrower protein range for infant formulas (as detailed in sections below) based on new scientific data and a National Academies of Sciences, Engineering and Medicine (NASEM)⁶ Expert Committee on Protein Quality and Growth Monitoring Studies to Satisfy Quality Factor Requirements for Infant Formula provides four recommendations for FDA’s consideration on protein

¹ Codex Alimentarius Commission. 2007. Standard for infant formula and formulas for special medical purposes intended for infants. Codex Stan 72–1981w. Rome (Italy): Codex Alimentarius Commission.

² Abrams SA, Brenna JT, Clemens R, Cohran VC, Du N, Gilbaugh A, Goran MI, Guild A, Kerner, Jr., JA, Knudsen TB, Krishna S, and Sentongo T. 2025. FDA Expert Panel on Infant Formula “Operation Stork Speed” June 2025: Part 1, Nutrient Considerations. doi: 10.20944/preprints202508.0225.v1

³ Abrams SA, Bergner EM. Perspective: Is It Time to Revise the Current Nutrient Requirements for Infant Formulas Principally Established in 1980? *Adv Nutr.* 2023 May;14(3):426-431. doi: 10.1016/j.advnut.2023.02.006

⁴ Kuczmarski RJ, Ogden CL, Grummer-Strawn LM, Flegal KM, Guo SS, Wei R, Mei Z, Curtin LR, Roche AF, Johnson CL. 2000. CDC growth charts: United States. *Adv Data.* (314):1-27. PMID: 11183293.

⁵ Centers for Disease Control and Prevention, National Center for Health Statistics. Reviewed September 2, 2024. WHO growth standards for use in US infants and children birth to 2 years. <https://www.cdc.gov/growthcharts/who-growth-charts.htm>

⁶ National Academies of Sciences, Engineering, and Medicine. 2025. *Protein Quality and Growth Monitoring Studies: Quality Factor Requirements for Infant Formula*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/29065>.

quality factor requirements for infant formulas, along with additional conclusions and research needs:

- 1) The FDA should not use the protein efficiency ratio (PER) as the method for establishing the biological quality of protein of new infant formulas and should reconsider the need for the existing draft guidance on PER.
- 2) The FDA should adopt the human milk amino acid pattern as the reference pattern to assess the protein quality of infant formula.
- 3) The FDA should provide guidance to manufacturers of infant formula when there is need for evidence of digestibility and bioavailability and on acceptable methods of assuring protein quality that reflect the types of changes in the composition or processing of the formula.
- 4) The FDA should publish a single guidance document that describes: (1) the preferred design features of a growth monitoring protocol and explains how FDA uses required information in its evaluation that a formula supports normal physical growth, and the conditions under which alternative designs may be acceptable to FDA; and (2) guidance that outlines the conditions under which a growth monitoring study is needed. That guidance should take into account (1) whether the change in infant formula could reasonably affect growth, (2) if a new ingredient is normally found in human milk, (3) the extent to which prior studies have examined the effect of a new ingredient on growth, and (4) information about the effects of addition of the ingredient on the level of or bioavailability of a nutrient, whose deficiency over the course of the study would be manifested in reduced growth.

A large body of evidence has also accumulated providing updated recommendations for other nutrients and micronutrients in infant formulas since 1998, which are detailed more in the sections below, making it necessary to reevaluate these values.

2. What scientific data or information have emerged since the 1998 comprehensive assessment (Ref. 1) regarding nutrient intakes for healthy, full-term infants that are associated with poor short- and/or long-term health outcomes?

Information and health concerns that are NOT based in science related to seed oils in infant formulas have been raised in the media more recently. However, scientific evidence and consensus among infant nutrition experts support that seed oils are safe in infant formula. Seed oils have long been considered a necessary ingredient in infant formulas because they support minimal levels of essential fatty acids linoleic acid and alpha-linolenic acid, as well as being readily available in pure form at modest cost. While we are aware of caregiver's inquiries about formulas with alternative fat sources, the purposeful omission of seed oils as a class should be carefully considered. Omitting or limiting seed oils in infant formulas could lead inadvertently to fatty acid deficiencies, negatively affecting infants' skin integrity, growth, and neurocognitive development.

3. Which existing nutrients required in [21 CFR 107.100](#) should we review? Please explain your rationale.

PROTEIN: The current broad range of 1.8 to 4.5 g/100 kcal for protein content may benefit from being narrowed. This range is significantly higher than the protein content of human milk, which ranges from 1.1 to 1.4 g/100 kcal. The European Society of Pediatric Gastroenterology and Nutrition (ESPGHAN) coordinated an International Expert Group in 2005 that recommended⁷ a narrower protein range than 21 CFR 107.100, specific to the protein source: cow's milk protein (1.8–3 g/100 kcal), soy protein isolates (2.25–3 g/100 kcal), and hydrolyzed cow's milk protein (1.8–3 g/100 kcal). The FDA Expert Panel on Infant Formula Nutrient Considerations article¹ suggests narrowing the protein range to 1.8 to 3 g/100 kcal/day, which aligns with ranges associated with normal growth, decreased long-term risk of overweight and obesity, and the 2005 ESPGHAN International Expert Group recommendations.

Many protein isolates are used in U.S. infant formulas and their amino acid profiles are different than that of human milk. These differences support the need for evaluation of novel protein blends for future infant formulas that more closely mimic the amino acid profile of human milk and lead to better growth and development outcomes with reduced risk for chronic diseases.

FAT/ LINOLEIC ACID: 21 CFR 107.100 specifies that total fat must be between 3.3 and 6.0 g/100 kcal (30% to 54% of energy), and omega-6 linoleic acid (LA) must be at least 300 mg/100 kcal of formula (2.7% of energy). The fat and fatty acid requirements have not been updated since their enactment in 1985, other than allowing the addition of single-cell sources of omega-3 docosahexaenoic acid (DHA) and omega-6 arachidonic acid (ARA) to infant formulas. A sizable body of literature is now available related to guidelines for total fat and fatty acids in infant formulas, which are discussed under question #5 below. FDA should consider setting a maximum allowable amount of omega-6 LA, as well as omega-3 DHA and omega-6 ARA following a review of the latest science by an independent panel.

CARBOHYDRATES: Carbohydrate type and minimum or maximum amounts for carbohydrates are not currently stipulated. The only requirement is that carbohydrate ingredients, like all others, must be designated GRAS for use in infant formulas. U.S. formulas use a variety of sugars, including lactose, glucose-based polymers (corn syrup solids, maltodextrins), and sucrose. Only lactose is present in human milk and infant formulas should be designed to mimic human milk whenever possible making lactose the preferred primary carbohydrate whenever possible. There is limited preliminary evidence regarding potential adverse health effects resulting from certain carbohydrate types used in infant formulas which should be explored further.

VITAMINS and MINERALS: Find more information on infant formula micronutrient recommendations in response to question #4 below.

⁷ Koletzko B, Baker S, Cleghorn G, et al. 2005. Global standard for the composition of infant formula: Recommendations of an ESPGHAN coordinated international expert group. *Journal of Pediatric Gastroenterology and Nutrition*, 41(5), 584-599.

4. For the nutrients required in [21 CFR 107.100](#), what, if any, adjustments should be made to existing minimum or maximum levels? For the 20 nutrients with only a minimum level, which, if any, should have a maximum level added? Please explain your rationale. For example, describe how changes might positively impact health outcomes.

Certain minerals and vitamins in infant formulas should be reevaluated, including calcium, phosphorous, iron, selenium, iodine, inositol, choline, zinc, Vitamin A, and vitamin D should also be considered, with maximum levels set when there are none currently. This includes establishing maximum concentrations for calcium and phosphorus, which Codex Alimentarius¹ has set as 140 mg/100 kcal for calcium and 100 mg/100 kcal for phosphorous. An older supplement in the *Journal of Nutrition*⁸ proposes upper limits for many of the vitamins and minerals in infant formulas. A 2010 research article⁹ found that many infant formulas met the minimum levels, but some nutrients were likely to exceed proposed maximum values set by Codex Alimentarius.

Current data suggests that the maximum iron level allowed in U.S. infant formula is too high (3.0 mg/100 kcal, 20 mg/L) and produces a greater risk of harm than benefit. A maximum level of 1.3 mg/100 kcal was set by the European Food Safety Authority (EFSA). Substantial data suggest that the U.S. maximum should be reduced to 10 mg/L (about 1.5 mg/100 kcal).

5. What other nutrients (*e.g.*, docosahexaenoic acid and arachidonic acid) or specifications for nutrients (*e.g.*, ratio of linoleic acid to alpha-linolenic acid), if any, should we consider adding to [21 CFR 107.100](#)? Please explain your rationale.

The AN Perspective³ shares information regarding the need to update nutrient requirements for fatty acids DHA and ARA in infant formulas after a thorough review of the science conducted by an independent panel. Data show that omega-3 DHA supports neurocognitive development, with a focus on balanced fatty acids and the use of omega-6 ARA allows for optimal body growth.

FDA should also consider the inclusion of bioactive ingredients not addressed in the Infant Formula Act, such as lutein and prebiotics, which are commonly added to infant formulas by manufacturers currently. Most optional ingredients, especially bioactive ingredients, are electively added to infant formulas using a pre-market notification and review process but are not found in all infant formulas. Clinical research and pre-clinical evidence of health outcomes should continue to be needed to support the inclusion of any optional ingredients. It should be noted that currently optional ingredients, including prebiotics, are not found in Special

⁸ Assessment of Nutrient Requirements for Infant Formulas. 1989. *Journal of Nutrition*. Volume 119, Supplement 12, S1763-1873. [https://jn.nutrition.org/issue/S0022-3166\(89\)X1914-9](https://jn.nutrition.org/issue/S0022-3166(89)X1914-9)

⁹ MacLean et al. 2010. Upper levels of nutrients in infant formulas: Comparison of analytical data with the revised Codex infant formula standard. *Journal of Food Composition and Analysis* 23;44–53.
Doi:10.1016/j.jfca.2009.07.008

Supplemental Nutrition Program for Women, Infants, and Children (WIC)-approved formulas due to cost, limiting access to potential benefits conveyed by these ingredients for certain populations. Updated regulations should continue to support infant development while providing sufficient flexibility to enable innovation in formulation and provide an expanded range of product options for caregivers.

6. Which nutrients, if any, should we remove from [21 CFR 107.100](#)? Please explain your rationale.

FDA may wish to reevaluate carbohydrate type and content allowed in infant formulas based on limited preliminary evidence regarding potential adverse health effects resulting from certain carbohydrate types used in infant formulas.

As the FDA prepares to consider all information received in response to this RFI, it is critically important that the agency ensure it has adequate staff and advisors with expertise in infant nutrition to undertake this review, which will ultimately have a major impact on the health and nutrition of countless infants. It is also important for the agency to consider costs incurred by manufacturers that may be passed along to consumers as part of this nutrient review, as it is vitally important to keep infant formula affordable and accessible to all caregivers and families.

Following an update to the nutrient requirements for infant formula, there is a strong need for an educational campaign targeted to consumers and health care professionals regarding infant formula. As part of that campaign, the FDA should continue to stress that homemade infant formulas carry many significant health risks and should never be provided to infants. This review also presents a good time for the FDA to consider allowable marketing, advertising, and product labeling of infant formulas to ensure they are accurate and not misleading, as there is often considerable consumer confusion around this product category.

Thank you for considering the comments and information provided by ASN related to Infant Formula Nutrient Requirements. ASN commends the agency's efforts to reassess and enhance infant formula composition while maintaining safety. Please contact Sarah Ohlhorst, MS, RD, ASN Chief Science Policy Officer (240-428-3647; sohlhorst@nutrition.org) if ASN may provide additional information.

Sincerely,



Naïma Moustaid-Moussa, PhD
2025-2026 President, American Society for Nutrition