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Some food additives raise safety concerns for child health; AAP offers guidance

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Rapidly accumulating scientific evidence suggests that certain chemicals added during the processing of foods and those that may come into contact with food as part of packaging or processing may contribute to disease and disability.

More than 10,000 chemicals are allowed to be added to food in the U.S., but the Food and Drug Administration (FDA) is unable to ensure all of those chemicals are safe.

Many chemicals are used under a Generally Recognized as Safe (GRAS) designation without FDA approval or notification. They're designated as safe by company employees or hired consultants. Of the nearly 4,000 food additives listed on the FDA's Substances Added to Food website (<http://bit.ly/2MHB3pN>), data for effects on reproductive organs are available for less than 300, and only two have information about effects on development.

A new AAP policy statement and technical report, *Food Additives and Child Health*, suggest simple steps to reduce exposure to these substances. The documents, from the AAP Council on Environmental Health, are available at <https://doi.org/10.1542/peds.2018-1408> and <https://doi.org/10.1542/peds.2018-1410> and will be published in the August issue of *Pediatrics*.

Array of possible effects

Children are particularly vulnerable to the effects of chemicals added to foods because they eat more per pound than adults, and their developing organ systems may be susceptible. The greatest concerns are about the effects of these chemicals on the endocrine system; hormones act on all parts of the body, and even small disruptions at key moments in development can have permanent and lifelong consequences.

Some of these chemicals have received wide attention in the news. Bisphenols used in polycarbonate plastic containers and linings of aluminum cans have been associated with obesity and attention-deficit/hyperactivity disorder. Phthalates used in plastic food wraps and tubing and storage containers in industrial food production are known to affect male reproductive development. Grease-proof paper can contain perfluoroalkyl substances associated with decreases in birth weight. Perchlorate prevents static in some packaging and inhibits thyroid function, which is crucial for brain development as well as a host of other key functions. Nitrates used as preservatives and color enhancers have been linked to various types of cancer.

These are among the best known chemicals of concern but not the only ones. Under the Federal Food, Drug and Cosmetic Act (FFDCA), the FDA does not have authority to obtain data or reassess safety of chemicals already on the market. Some chemicals were approved decades ago based on limited and sometimes antiquated testing methods. The FDA does not regularly consider cumulative effects of food additives in the context of other chemical exposures that may affect the same biological receptor or mechanism, despite its legal requirement to do so. In addition, the FDA's toxicologic testing recommendations have not been updated based on new scientific information.

Recommendations for pediatricians

Pediatricians can offer the following guidance to families, tailoring it if food insecurity is a concern:

- Eat fresh or frozen fruits and vegetables when possible.



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- Avoid microwaving food or beverages (including infant formula and pumped human milk) in plastic, if possible.
- Avoid placing plastics in the dishwasher.
- Use alternatives to plastic, such as glass or stainless steel, when possible.
- Look at the recycling code on the bottom of plastic products and avoid plastics with recycling codes 3 (phthalates), 6 (styrene) and 7 (bisphenols) unless plastics are labeled as biobased or greenware, indicating they are made from corn and do not contain bisphenols.
- Encourage handwashing before handling foods/drinks.
- Wash all fruits and vegetables that cannot be peeled.

Recommendations for policymakers

Pediatricians also can advocate for modernization of the FFDCA. The FDA could accomplish some of the following recommendations, while others may require congressional action to change the law.

- Revise the GRAS and implement a more robust and transparent process to evaluate chemicals, including toxicity testing prior to approval for the marketplace.
- Gather missing data and dedicate resources for research and testing that will allow for a more effective evidence-based database to support a revised FDA safety review process.
- Establish requirements for prioritization and retesting of previously approved chemicals and provisions that ensure transparency and public access to information.
- Require labeling of additives with limited or no toxicity data and those the FDA has not reviewed for safety.
- Update the scientific foundation for the FDA safety assessment process.

Congress also will need to give the FDA authority to collect information about use of food additives and to require additional data from industry when gaps in knowledge and potential safety concerns are raised.

The stakes for children's health and the economy are substantial. Actions to reduce these exposures may produce benefits greater than the costs of prevention.

Dr. Trasande is a lead author of the policy statement and technical report. He is a former member of the AAP Council on Environmental Health Executive Committee.