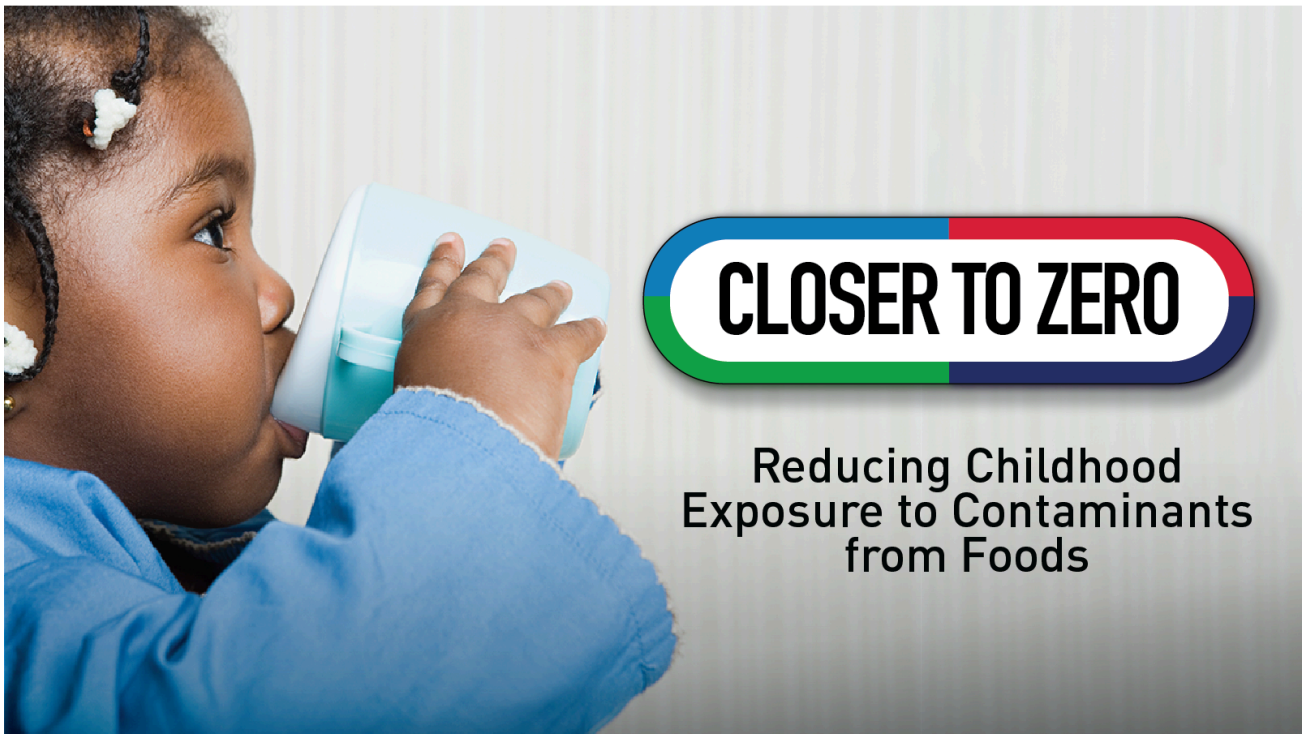
Environmental Contaminants in Food

Environmental contaminants can be present in foods because they are in the soil, water, or air where foods are grown, raised, or processed. Results of the FDA's testing data can be found on the individual contaminant pages, as well as on the Total Diet Study (/food/fda-total-diet-study-tds/fda-total-diet-study-tds-results) and Combination Metals Testing (/food/environmental-contaminants-food/testing-results-arsenic-lead-cadmium-and-mercury) pages.

Environmental contaminants include:



(/food/environmental-contaminants-food/closer-zero-reducing-childhood-exposure-contaminants-foods)

In *Closer to Zero* (/food/environmental-contaminants-food/closer-zero-reducing-childhood-exposure-contaminants-foods), the U.S. Food and Drug Administration (FDA) identifies actions the agency will take to reduce exposure to arsenic, lead, cadmium, and mercury from foods eaten by babies and young children—to as low as possible.

- Arsenic (/food/environmental-contaminants-food/arsenic-food), Lead (/food/environmental-contaminants-food/lead-food-and-foodwares), Mercury (/food/environmental-contaminants-food/mercury-food), and Cadmium (/food/environmental-contaminants-food/cadmium-food-and-foodwares), sometimes

referred to as heavy metals or toxic elements, may occur naturally in the environment and are often at higher levels from past industrial uses and pollution.

    - These contaminants have been prioritized due to their potential to cause harm during times of active brain development—in the womb through early childhood. Learn more at: Closer to Zero (/food/environmental-contaminants-food/closer-zero-reducing-childhood-exposure-contaminants-foods) and Advice About Eating Fish (/food/consumers/advice-about-eating-fish).

- Perchlorate (/food/environmental-contaminants-food/perchlorate) is manufactured for use in industrial chemicals and may also occur naturally in the environment.
- Radionuclides (/food/environmental-contaminants-food/radionuclides-domestic-and-imported-foods) (radioactive forms of elements) occur naturally in the environment or may be present when radioactive materials are discharged into the environment from nuclear operations.
- Human-made chemicals formed from or used in manufacturing industrial and consumer products, and include: Benzene (/food/environmental-contaminants-food/benzene), Dioxins and PCBs (/food/environmental-contaminants-food/dioxins-pcbs), and Per- and Polyfluoroalkyl Substances (PFAS) (/food/environmental-contaminants-food/and-polyfluoroalkyl-substances-pfas).

The FDA monitors contaminant levels in foods, establishes regulations, and provides guidance to food manufacturers on how to meet their legal obligation to implement preventative controls as needed to significantly minimize or prevent chemical hazards in foods. The FDA also partners with other U.S. and international regulatory agencies on monitoring and regulatory activities for contaminants. If the agency finds that the level of a contaminant in a food causes the food to be unsafe, we take action, which may include working with the manufacturer to resolve the issue and taking steps to prevent the product from entering, or remaining in, the U.S. market.

FDA's Toxic Elements Working Group

The agency aims to reduce exposure to arsenic, lead, cadmium, and mercury, referred to as toxic elements, in food, cosmetics, and dietary supplements. The Toxic Elements Working Group is made up of senior leaders and risk managers in the Center for Food Safety and Applied Nutrition (CFSAN) with experience in microbiology, toxicology, chemistry, medicine, epidemiology, policy, and law. The group is tackling the issues presented by these elements using the following approach:

- **Prioritizing by toxicity and prevalence** – The group is looking at the presence of arsenic, lead, cadmium and mercury in all products CFSAN regulates and identifying the areas where the FDA can have the greatest impact on reducing exposures. The workgroup is focusing on lead, arsenic, cadmium, and mercury in foods, cosmetics, and dietary

supplements, because high levels of exposure to these are likely to have the most significant impact on public health.

Essential to prioritization is studying the large amount of data we have collected over the years. The FDA has been collecting data on contaminants and nutrients in foods for decades as part of its Total Diet Study (/food/reference-databases-and-monitoring-programs-food/fda-total-diet-study-tds). The study routinely samples products found in grocery stores from across the country, testing them for hundreds of contaminants, including these elements. These data are important because they can help us better understand how consumers are exposed to these contaminants.

- **Identifying most vulnerable populations** – People vulnerable to the harmful effects of arsenic, lead, cadmium and mercury in food include infants and children, the elderly, and consumers who may have chronic health conditions. As the agency works to reduce consumer exposure through foods and other products, we are paying special attention to children because their smaller body sizes and metabolism may make them more susceptible to the harmful effects of these elements. Of particular concern is the effect these elements have on children's neurological development.

  In 2021, the FDA released *Closer to Zero* (/food/environmental-contaminants-food/closer-zero-reducing-childhood-exposure-contaminants-foods), to outline the agency's actions for reducing lead, arsenic, cadmium, and mercury in the foods eaten by babies and young children.

- **Determining effective ways to reduce exposure** – The FDA is committed to using the best available science to inform and support policy decisions on lead, arsenic, cadmium, and mercury. The FDA will consider a wide range of policies and actions to reduce exposure, ranging from requiring or encouraging industry to take steps to reduce the presence of these contaminants in products to educating consumers about ways they can reduce the risks posed by arsenic, lead, cadmium, and mercury.

More on the Toxic Elements Working Group can be found on What FDA is Doing to Protect Consumers from Toxic Metals in Foods (/food/conversations-experts-food-topics/what-fda-doing-protect-consumers-toxic-metals-foods).