



EXECUTIVE SUMMARY

To view the full report, including detailed test results, visit healthybabyfood.org.

What's in your family's rice?

**Arsenic, Cadmium, and Lead
in Popular Rice Brands—
Plus 9 Safer Grains to Try**

**New tests show popular rice types
that parents should limit—
and safer choices**



EXECUTIVE SUMMARY:

Essential insights from tests of arsenic and cadmium in rice

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Rice: A daily staple, a hidden risk

Rice is the most widely consumed solid food in the world and a staple for more than a billion children. Yet for over 25 years, it has also been recognized as a leading dietary source of arsenic, a contaminant associated with health risks that include cancer and harm to the developing brain, including IQ loss.

Significant progress has been made in reducing arsenic levels in **infant rice cereal** over the past decade. The FDA established a limit for arsenic in this cereal; major baby food brands discontinued the use of the most contaminated rice cereal variety (brown rice cereal); at least five states removed infant rice cereal from subsidy programs; and baby food companies reduced the average arsenic level in infant rice cereal by 45%.

However, **no similar action has been taken for rice itself**, even though it — not infant rice cereal — is the **top source of arsenic** from solid foods in the diets of children under two, and a concern during pregnancy, the most critical window for brain development. New tests commissioned for this report found arsenic in **100%** of 145 rice samples purchased nationwide. More than **one in four**

exceeded the FDA's action level for infant cereal, a limit above which FDA can consider the cereal to be adulterated. For parents making baby food at home, this means homemade rice cereal could contain arsenic levels considered unsafe if sold in stores.

We found four toxic heavy metals in rice — **arsenic, cadmium, lead, and mercury**. While each contaminant has different health effects, they can contribute to serious risks like cancer, developmental harm including IQ loss, and accumulation in the body over time. Arsenic was found at the highest levels, with cadmium next.

Like many crops, rice absorbs these metals that are naturally present in soil. But rice tends to accumulate significantly more arsenic*, making it a unique and concerning source of exposure. Tests also showed **elevated cadmium** in some samples, and, in a saffron-seasoned rice, **lead levels far above** amounts in other samples.

*(*In this report, “arsenic” refers to inorganic arsenic — the more toxic form and the primary concern in rice — unless otherwise specified.)*



In contrast, the 66 samples of nine alternate grains we tested — including quinoa, farro, and barley — contained **69% less heavy metal contamination**¹ than rice, on average, making them safer substitutes. Arsenic levels were also lower in instant (5-minute) rice, but a high-heat manufacturing step can increase amounts of a particularly toxic form of arsenic² in rice products, so we do not recommend it as a safer option. Our tests did identify **three types of rice consistently lower** in total heavy metals: California-grown rice, Thai jasmine rice, and Indian basmati rice — offering better options for families aiming to reduce exposure.

However, the cost of these safer alternatives can be a major barrier for families. On average, the alternative grains we purchased **cost five times as much** as rice (\$0.53 vs. \$0.10 per serving). And affordability for some of the lowest-arsenic rice varieties is about to worsen. As of April 2025, U.S. tariffs may significantly raise the price of imported rice. Ten percent tariffs are in effect now, and higher tariffs of 36% for Thai jasmine rice and 26% for Indian basmati rice are set to begin in July. Our shoppers also found that rice labeled as California-grown, another lower-arsenic option, tended to cost more in their stores than rice from other regions. For families on tight budgets — or those whose only nearby grocery options are small stores with limited rice varieties — higher-arsenic rice may be the only affordable choice.

Given these cost concerns, it's good news that a **no-cost action is available to families that reduces arsenic in rice by up to 60%: Cooking rice like pasta.** Boiling rice in excess water and draining before serving significantly reduces arsenic content. Two additional steps also help but come at a cost: **Incorporating other grains** such as quinoa, farro, or barley to diversify the diet; and **Choosing rice varieties lower in heavy metals** like California-grown rice, Thai jasmine, or Indian basmati. **Each of these three steps lowers arsenic or total heavy metal exposure from rice by an estimated 30 to 70%.**

Three FDA and state actions could also deliver powerful benefits for families: Set limits (action levels) for both arsenic and cadmium in rice; **Permit labeling** for rice products that meet the infant rice cereal standard — when companies test and publicly share their results; **Require testing and disclosure**, building on California's successful "Food Safety: Baby Food" Act (AB 899) and Maryland's "Baby Food - Toxic Heavy Metals" Act (SB0723). These steps would not only empower families to make safer choices but also create strong incentives for

companies to adopt proven best practices to reduce heavy metal levels in their products. States could act in advance of FDA, especially in requiring testing and disclosure. The greatest benefits would go to Asian American, Hispanic, and Latino families, for whom rice is often a daily staple. Rice contributes a significantly larger share of daily arsenic exposure for children in these families, up to seven times more than for other children.

Without FDA or state action, the problem for families could get worse. Some growers are adopting reduced-irrigation methods that help lower arsenic levels — but these methods can **raise cadmium amounts** in rice. At the same time, **arsenic levels are expected to rise** in rice grown in regions experiencing higher average temperatures during the growing season, compounding the risk. Given these prospective changes, action to empower consumer choice and spark industry-wide change is essential.

Rice is a versatile, culturally essential staple. While it contains a mix of heavy metals — most notably arsenic — so do most other foods. What sets rice apart is its relatively high arsenic levels and widespread, frequent consumption. Fortunately, **levels of arsenic and other heavy metal in rice are far lower than those causing acute poisoning**, such as the lead-contaminated applesauce that sickened at least 22 children in 2023. The health risks aren't from short-term exposure, but from low-level, chronic intake over time - particularly during vulnerable stages like pregnancy, infancy and early childhood.

Arsenic and other heavy metals in rice are linked to cancer, IQ loss, and other cognitive and behavioral deficits. The risk to any one child is small, but the ideal exposure is zero. With the simple steps listed above, **families can continue to enjoy rice while reducing risks.** Just as risk accumulates, so do small choices that protect children's health over the long term.

This first-of-its-kind analysis of total heavy metal content across different rice types, growing regions, and alternative grains highlights two key takeaways: FDA and state action on this issue would provide meaningful protection for families, and, in the meantime, consumers can make informed choices to reduce heavy metal exposure at home. **Our results show that protecting children from arsenic and cadmium in rice isn't just possible — it's essential, and entirely within our reach.**

1 "Heavy metal contamination" or "total heavy metals" indicate the combined amount of inorganic arsenic, cadmium, lead, and mercury.

2 DMMTA, or dimethylmonothioarsenate, formed when the arsenic compound DMA reacts with certain amino acids and B vitamins in rice during high-heat manufacturing steps (Carrijo 2022).

FOR PARENTS:

3 simple changes to lower arsenic and cadmium exposures from rice by up to 69%

Parents play a crucial role in protecting children, especially until rice companies and government health agencies act to reduce heavy metal contaminants. Lowering exposure is possible through simple choices — using safer cooking methods, incorporating alternative grains, and opting for lower-arsenic rice varieties. Making even one of these easy adjustments can meaningfully lower a family's intake of heavy metals from rice.

① A no-cost solution: Cook rice like pasta to reduce arsenic.

Research shows that cooking rice in 6 to 10 cups of water per 1 cup of rice and draining the excess water before eating can remove a significant amount of arsenic, the most concerning contaminant in rice. This method can even be adapted for rice cookers: partially cook the rice in extra water, drain it, then finish cooking with just enough fresh water. You may need to experiment to find the right amount of water for your preferred rice type.

Tip: If you have time, soak rice for a half hour — or even overnight — and drain before cooking it like pasta, to improve the arsenic loss. Rinsing alone isn't effective.

Up to
60% less
arsenic than rice
cooked in just
enough water

② Add variety to your diet with rice alternatives.

Expanding your grain choices can significantly lower your exposure to heavy metals. HBBF testing found that alternatives such as quinoa, barley, couscous, and farro contain much lower total heavy metal levels than rice. These options include grains and pastas which can easily be swapped for rice in your meals.

69% less
heavy metals than
rice cooked in just
enough water



③ Choose rice with lower heavy metal contamination.

Some types of rice contain significantly lower total heavy metal levels—primarily arsenic and cadmium—compared to others. Based on HBBF testing and prior studies (e.g., CR 2014 and 2012, FDA 2016), the following varieties are better choices:

Lower in total heavy metals:

- California rice – Calrose, Sushi, Jasmine, White
- Jasmine rice (Thailand)
- Basmati rice (India)

Higher in total heavy metals:

- White rice grown in the Southeast U.S. or “USA”
- Brown rice
- Arborio rice (risotto) from Italy

May be higher in other contaminants of concern:

- Precooked rice - Instant (5-minute), Parboiled (10-minute), and Ready-to-Heat.
- Concerns: Higher levels of especially toxic arsenic types, and packaging chemicals.

If you eat brown rice, choose brands grown in California. These tend to have lower arsenic and cadmium levels.

32% less
heavy metals than
other rice types
on average



Balance the plate: Pair rice with iron-rich nutritious foods.

Variety is key to a healthy diet. Iron-rich foods are especially important when serving white rice cooked like pasta, since boiling and draining can wash away the iron that's added during enrichment. Many babies don't get enough iron—and their needs increase between 6 and 12 months—so talk to your pediatrician about nutrition and iron-rich foods.

For variety, stand-out options include:

- **Iron-rich foods** – Lean red meat, poultry, beans, lentils, eggs, green vegetables, fresh and dried fruits.
- **Whole grains** – Aim to make at least half the grains you serve whole grains, like quinoa, barley, and farro (note: pearly grains and white rice are not whole).
- **Foods rich in calcium, zinc, B vitamins and vitamin C** – Many nutrients help reduce the body's absorption of contaminants or speed up their excretion. Find them in foods like lean meat, yogurt, cheese, leafy greens, broccoli, beans and lentils, citrus fruits, strawberries, and peppers.

Foods to skip - Rice-based processed foods are often high in arsenic that can't be boiled and drained away like arsenic in rice itself, including:

- Rice-based snacks
- Rice cakes
- Foods sweetened with brown rice syrup including some formula brands and cereal bars





Healthy Babies Bright Futures (HBBF) is working to create and support initiatives that measurably reduce exposures to neurotoxic chemicals in the first thousand days of development.

Our efforts are inspired and supported by science and data, and designed to help restore the chance for a full life to children who would otherwise face brain-diminishing exposures to toxic chemicals beginning in utero.

Learn more at hbbf.org