

## EXECUTIVE SUMMARY

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# Arsenic in 9 Brands of Infant Cereal

A national survey of arsenic contamination in 105 cereals from leading brands. Including best choices for parents, manufacturers and retailers seeking healthy options for infants.



IN PARTNERSHIP WITH



# Arsenic in 9 brands of infant rice cereal

Our findings show the urgency for action by parents, cereal makers, and FDA to get high-arsenic cereals off store shelves and out of infants' diets

## EXECUTIVE SUMMARY

It's no secret that infants ingest traces of arsenic with every bite of rice cereal. Widespread reporting on the problem began five years ago, when tests by Consumer Reports found arsenic in rice and rice-based foods, including infant rice cereal. Rice readily absorbs arsenic from the environment, about 10 times more of it than other grains.

Widespread concern and public pressure – combined with growing science on arsenic's toxicity at low levels – should have spurred the U.S. Food and Drug Administration (FDA)

and the cereal industry to take high-arsenic cereals off store shelves. It hasn't happened.

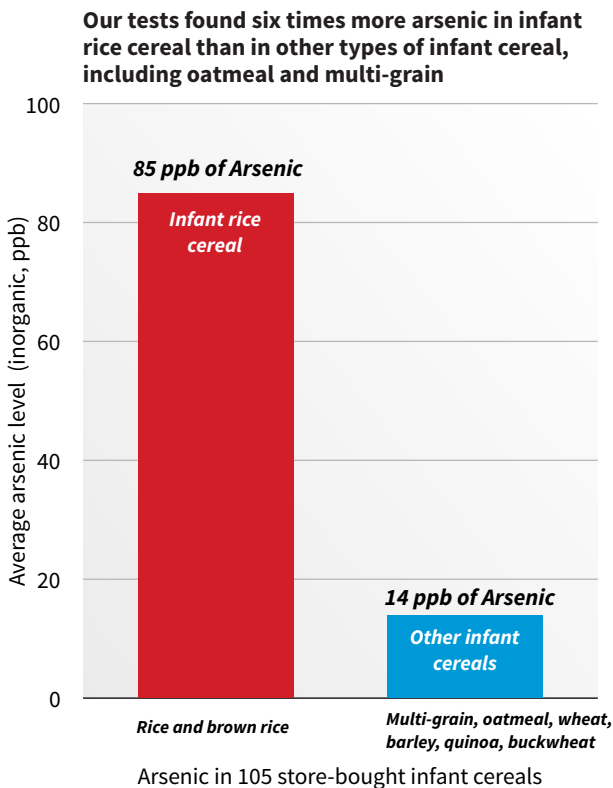
FDA is, in a word, stalled. More than a year after issuing its 2016 draft guidance to cereal makers – the culmination of four years of assessment – FDA is falling short of protecting infants. It has not set a final limit for arsenic in rice cereal. It has failed to finalize the proposed cap in its draft guidance, even though there is no known safe level of arsenic exposure.

Arsenic is strictly regulated in drinking water, but is legal in any amount in infant rice cereal. It is a potent human carcinogen and a neurotoxin shown to permanently reduce children's IQ.

A new study led by Healthy Babies Bright Futures (HBBF) helps parents navigate the gaps. HBBF's tests of 105 infant cereals show that non-rice and multi-grain varieties on grocery shelves nationwide – including oatmeal, corn, barley, quinoa, and others – contain 84 percent less arsenic than leading brands of infant rice cereal, on average. These alternate cereals include reliable and affordable choices for parents seeking to reduce infants' exposures to arsenic.

We tested infant cereal made by Gerber, Earth's Best, Beech-Nut, Nestlé, and five other brands. All but one of the 42 containers of infant rice cereal we tested had more arsenic than any of the 63 other cereals included in our study.

HBBF's tests are the first published results for arsenic in infant cereals that are made from some increasingly available alternate grains – including gluten-free, sprouted, and nutritious "superfood" grains. We tested cereals made from oats, corn, barley, quinoa, wheat, amaranth, millet, sorghum, flax, buckwheat, and rye.



## HOW TO LOWER YOUR CHILD'S ARSENIC EXPOSURE

Choose these infant cereals instead of rice cereal: oatmeal, mixed grain, quinoa, barley, buckwheat, and wheat. Our tests found low arsenic levels in all brands tested.

Cost-saving tip: Oatmeal and multi-grain infant cereals are just as affordable as rice cereal.

Avoid rice snacks. They have high arsenic levels, too.

Does your family eat rice? Cook rice in extra water that you pour off before eating to reduce arsenic. For the lowest levels, buy basmati rice grown in California, India, and Pakistan. Better yet, try other grains, like quinoa and farro.



Our study uncovered some good news. Our results suggest that cereal makers have taken steps to limit arsenic. We found 85 ppb of arsenic, on average, in rice cereals tested in 2016 and 2017, versus the 103 ppb average level FDA found in 2013 and 2014. Still, rice cereals contain too much arsenic. Among expected health impacts from arsenic in rice cereal are increased cancer risk and harm to neurological development. Our tests show that rice cereals contain consistently higher amounts of arsenic – six times higher on average – than mixed grain and non-rice cereals.

**HEALTH COST:  
DIMINISHED INTELLIGENCE FOR CHILDREN**

HBBF commissioned a new economic analysis to accompany our laboratory tests. It includes a comprehensive review and new analysis of IQ loss attributed to arsenic in infant rice cereal and other rice-based foods.

The findings underscore the urgency for action by cereal makers and FDA to get high-arsenic cereals off store shelves. The research team at Abt Associates, a nationally recognized toxicology and economic research group, estimates that arsenic in infant rice cereal and other rice-based foods accounts for an estimated loss of up to 9.2 million IQ points among U.S. children ages 0-6. This harm costs the country an estimated \$12-18 billion annually in lost wages, the result of IQ being diminished across the workforce from ubiquitous, early-life exposure to arsenic in rice (Abt 2017).

Arsenic is known to cause lung, bladder, and skin cancer, but arsenic in infant rice cereal also poses a threat to the developing brain. In the peer-reviewed scientific literature, at least 13 studies link arsenic to IQ loss and other neurodevelopmental impacts for children exposed in utero or during the first few years of life (Rodriguez-Barranco 2013).

**Arsenic in rice: The impact to children's learning ability and the economy**

**9.2 million IQ points lost**  
children 0-6 years old

LOST LIFETIME EARNINGS  
**\$12-18 billion**  
annual cost for the US

SOURCE: ABT 2017

Widespread exposure to arsenic in infant rice cereal, like children's exposures to lead, shifts the population-wide IQ curve down. It nudges more children into special education, and ratchets down the IQ of the most creative and intellectually gifted children. For an individual child, the harm appears to be permanent (Wasserman 2007 and 2016, Hamadani 2011).

**RICE CEREAL:  
INFANTS' TOP SOURCE OF ARSENIC**

Rice, in contrast with other grains, readily absorbs and concentrates arsenic from soil and water. It concentrates about 10 times more arsenic than other grains used in infant cereals. Rice is also grown where arsenic is abundant, magnifying the problem. Rice in the southern U.S. is often planted in old cotton fields, where (now banned) arsenic pesticides were sprayed for decades. Fertilizer contributed as well, when it included chicken waste laced with growth-

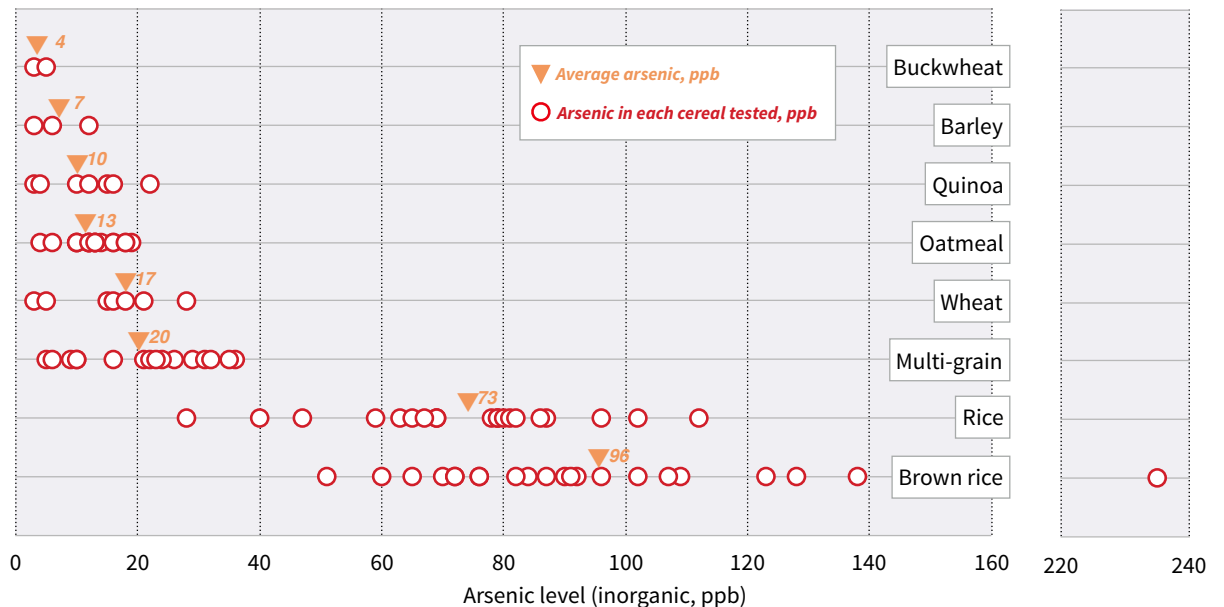
promoting arsenic additives (now mostly banned) that were routinely fed to the birds. Rice is also often cultivated in flooded fields; under these conditions, arsenic is prevalent in its most toxic (trivalent) form, the form most easily accumulated by rice.

With so many factors boosting arsenic uptake in rice, it's no surprise that infant rice cereal contains high levels.

Arsenic is ubiquitous in soil and water, and contaminates many foods. But infant rice cereal is the major source of arsenic for infants, accounting for 55 percent of their total dietary exposure (Shibata 2016). Sixty-four percent of infants four to six months old have been served rice cereal. Eighty percent eat it by their first birthday. The amount of arsenic is considerable: infants who eat rice cereal have 3.3 times more arsenic in their urine than infants with a rice-free diet (Karagas 2016).

Fortunately, many lower-arsenic cereals are affordable. For example, retailers offer Gerber and Earth's Best infant oatmeal and multi-grain cereals for the same price as their rice cereal.

**Infant rice cereal consistently higher in arsenic:**  
*All but one rice cereal we tested - 41 containers altogether - had more arsenic than any of the 63 non-rice and multi-grain cereals tested.*  
**Arsenic in 105 store-bought infant cereals**



# INFANT CEREALS PURCHASED FOR THE STUDY: BRANDS, GRAINS, AND STORES

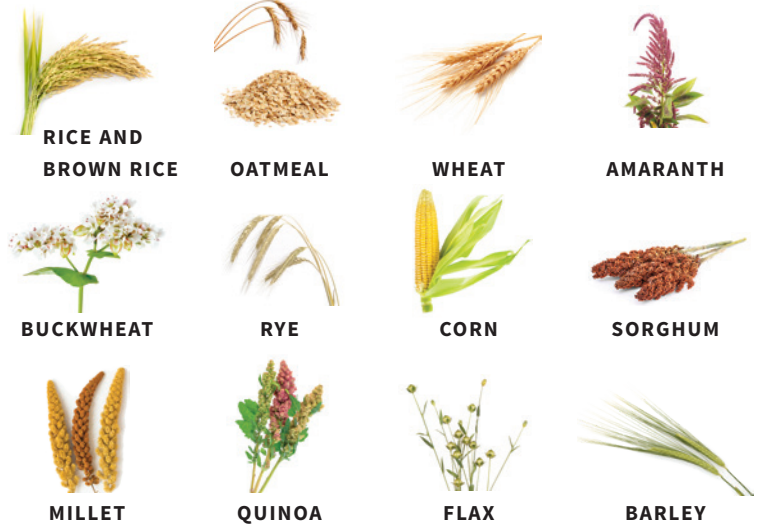
We selected 105 individual containers of 45 different cereals for testing, sold under nine brand names and made from 13 grains. Testing was performed at Brooks Applied Labs in Bothell, Washington. Multi-grain and non-rice cereals had far less arsenic than the rice cereals we tested.

9  
cereal brands



45  
unique cereal products

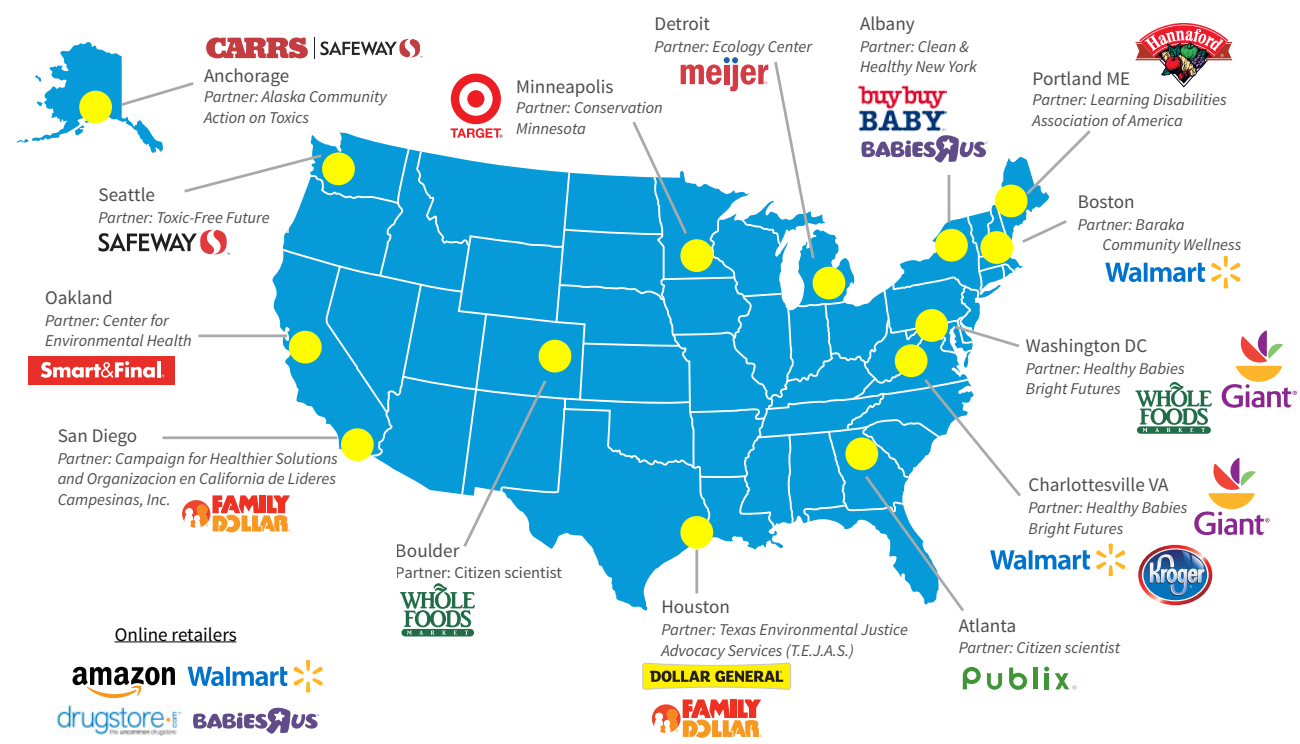
13  
grains



105  
separate containers

14 metropolitan areas and 15 retail chains where cereal were purchased:

- supermarkets
- dollar stores
- baby stores
- superstores



## RECOMMENDATIONS

### Cereal Companies

Our research shows that cereal makers need to take immediate steps to reduce arsenic in their cereals. This action is especially needed to protect infants who rely on cereal as a staple food.

Solutions suggested by FDA and other experts include sourcing rice from fields with lower arsenic levels in soil, growing it with natural soil additives that reduce arsenic uptake by the roots, growing rice strains less prone to arsenic uptake, preparing rice with excess water that is poured off, and blending it with lower arsenic grains in multi-grain products.

We found no evidence to suggest that any brand has reduced arsenic levels in rice cereal to amounts comparable to those found in other types of cereal, despite at least five years of significant public attention to the issue that has included widespread consumer alerts and a proposed federal action level (Consumer Reports 2012 and 2014, FDA 2016c).



### FDA

FDA should act immediately to set an enforceable, health-based limit for arsenic in infant rice cereal and other rice-based foods. The limit should protect infants from both cancer and neurological harm.

In setting its 2016 proposed action level, the agency did not consider IQ loss or other forms of neurological impact, allowed cancer risks far outside of protective limits, and failed to account for children who have unusually high exposures to arsenic in rice (HBBF 2016).

Our study suggests that rice cereal makers can achieve a far lower, more health-protective limit than FDA's current proposal. Our tests found arsenic levels in rice cereal as low as one-fifth the amount FDA has proposed as its action level. Rapid action by FDA to set a protective level will protect children from arsenic-contaminated rice.



### Parents

Parents who include infant rice cereal in their baby's diet can immediately lower their child's arsenic exposures simply by switching to oatmeal, multi-grain, and other non-rice cereals. Many of these alternate cereals also contain added iron; in an infant's diet, they can replace iron otherwise supplied by fortified rice cereal. Some are as affordable as rice cereal, including common brands of oatmeal and multi-grain cereals.

We recommend that parents avoid infant rice cereal. Non-rice and multi-grain alternatives have consistently lower arsenic contamination, and are a healthier choice.

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**Author: Jane Houlihan, MSCE, National Director of Science and Health, Healthy Babies Bright Futures**

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Report design: Winking Fish

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Healthy Babies Bright Futures (HBBF) is an alliance of scientists, nonprofit organizations and donors 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](http://hbbf.org)