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# Arsenic in Brown Rice!

Julia Ferré

**A**rsenic is a naturally occurring element on earth, but due to many reasons, has found its way into the food supply in amounts higher than what nature would provide. The November 2012 article by *Consumers Reports* magazine about arsenic in rice has caused public outcry about food contamination. Countless articles have appeared on national news, the Internet, and in print. Recommendations abound from those who say to avoid brown rice completely to others who state there is no need for any dietary change.

In this polar-charged atmosphere, there must be a middle ground from which to responsibly react. In order to know what to do, it is important to go beyond demonizing or defending brown rice. Both sides trivialize the fact that there is need for comprehensive governmental oversight. Both sides would benefit from learning about the complex story of arsenic and how it is parallel to government agencies and corporate interests.

Macrobiotics is based on the foundation of eating healthy food; after all, founder George Ohsawa promoted a 10-day brown rice fast to jump start a healing cleanse. Macrobiotics also stresses the importance of educa-



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tion, information, and the ability to embrace change. To understand how to respond to the issue of arsenic in brown rice, there are three relevant aspects to consider—the situation, the data, and the political/corporate climate. These ideas can help macrobiotic consumers deal with the knowledge that arsenic is in many foods, and even so, live life without fear.

## **FIRST, THE SITUATION**

The article written by *Consumers Report* magazine has tremendous information about the many issues of arsenic; the first is on how arsenic gets into rice. Arsenic is on earth in two basic forms—organic (meaning combined with carbon), and inorganic (meaning combined with oxygen, chlorine, and sulfur).<sup>1</sup> These two forms are both noxious, but the inorganic form is even more so, and is listed as a carcinogen.<sup>2</sup>

Of the two, inorganic arsenic is found in pesticides, fertilizers, and compounds where it is used in industry, such as copper smelting or pressure-treated lumber. People can get exposed to it through the workplace, such as workers in plants smelting copper or when arsenic-containing minerals weather and arsenic seeps into groundwater, wells, and runoff. The roots of plants can absorb arsenic that is in soil. Since rice fields are flooded with water, the plants can easily take up the arsenic that is present.

Arsenic breaks down slowly—it stays in the environment a long time. While inorganic arsenic has been phased out of pesticides directly applied to food crops, it was once used

## Arsenic Levels in Rice<sup>9</sup>

Product	Origin	Total arsenic, ppb	Inorganic Arsenic (micrograms/serving)
365 Everyday Value Long Grain Brown Rice (Whole Foods)	Not specified	210 to 282	7.4 to 8.4
365 Everyday Value Organic Indian Basmati White (Whole Foods)	India	82.2 to 99.9	2.9 to 3.5
Lundberg California White Basmati	California	64.3 to 75.5	1.3 to 1.6
Lundberg Short Grain Brown	California	169 to 204	3.8 to 5.4
Texas Best Organics Long Grain Brown	Texas	252 to 287	4.2 to 7.6
Bob's Red Mill Organic Brown Rice Farina Creamy Rice	Not specified	131 to 165	3.0 to 4.3
Barbara's Brown Rice Crisps	Not specified	326 to 376	5.9 to 6.7
Lundberg Brown Rice Organic Rice Cakes	Not specified	161 to 195	2.2 to 3.1
Tinyada Brown Rice Pasta Shells	Not specified	190 to 249	4.2 to 5.7
Arrowhead Mills Organic Brown Rice Flour (¼ cup)	Not specified	361 to 565	4.3 to 5.5
Rice Dream Classis Original Rice Drink (1 cup)	Not specified	20.9 to 68.2	2.9 to 4.5
Lundberg Sweet Dreams Organic Brown Rice Syrup (2 Tbsp)	Not specified	167 to 180	4.6 to 5.8

heavily in cotton fields to control the boll weevil beetle. Many rice fields in the Southeastern part of the United States are in locations that were once cotton fields.

In addition, arsenic is currently added to animal feed and fed to chickens to prevent diseases and promote growth. The arsenic has been found in chicken litter, which is then used for fertilizer.<sup>3</sup> Many farmers apply chicken litter to rice fields, which is permissible under the Organics Food Act.<sup>4</sup> On the Lundberg farms website,

there is the admission of using chicken litter.<sup>5</sup>

### SECOND, THE DATA

“Consumers Union publishes *Consumer Reports* and is an independent non-profit organization whose mission is to work for a fair and safe marketplace for consumers and to empower consumers to protect themselves.”<sup>6</sup> Founded in 1936, they have written about the safety of foods for years, including “Arsenic in Juice”

(January 2012) where they tested samples of apple and grape juice;<sup>7</sup> and “You are what they eat,” (December 2004) where they tested arsenic in chicken.<sup>8</sup> Following the juice investigation, they tested 200 samples of rice and rice products for arsenic and found measurable amounts in all samples.

One of the reasons the *Consumers Report* article was written is to supply numbers of the amounts of arsenic they found. Another reason is to encourage change so the govern-

ment will establish responsible limits. Presently, there is no federal limit for arsenic in foods. There is a federal limit for drinking and bottled water, though, at 10 parts per billion (ppb). New Jersey has its own standard of 5 ppb for water. (This rate is equivalent to about 5 micrograms of arsenic in 1 liter of water.)

The article further states that there is a group advising the World Health Organization that is proposing standards with levels of 200 ppb for white rice and 300 ppb for brown rice.

The chart on page 6 lists a few listings from the *Consumer Reports* article, items that seem relevant to the macrobiotic community. As you look at these numbers, recognize that many of these samples fall within the above guidelines of 200 to 300 ppb of total arsenic and 5 to 10 micrograms per serving. While this data can help alleviate excess fear about brown rice that may be commonly consumed by macrobiotic people, it is important not to be complacent. There needs to be further and ongoing monitoring of arsenic in brown rice, as well as other foods, as discussed in the next section.

### THIRD, THE POLITICAL/ CORPORATE CLIMATE

The story of arsenic is tied in with agriculture, and the story of agriculture is tied in with politics, to some extent. Jill Richardson reports that arsenic was used as early as 1867 in the first synthetic pesticides, way before DDT was used. She quotes from the book, *War on Bugs*, where the author, Will Allen, states that by the 1930s, many millions of people had arsenic poisoning. The government began to get involved, not necessarily from people getting sick, but because companies developed other non-arsenical pesticides that were effective in killing the evolving pests. The government merely acted by canceling some of the arsenical registrations, which were being phased out anyway. Over

the past century, the United States has used 1.6 million tons of arsenic in agriculture and industrial use, about half of that amount since the mid 1960s. Current uses of arsenic are in herbicides and livestock drugs.

Thanks to the efforts of Monsanto, GMO crops are becoming more prominent. Their herbicide, Roundup Ready, is commonly used on GMO crops. And one weed—the Palmer Amaranth—has evolved resistance to Roundup Ready. This weed is like a super weed; it grows rapidly, it can take over fields, and one plant produces a million seeds. Before Roundup Ready, Palmer Amaranth was pretty much non-existent. The only herbicide that seems to work on it (for now, anyway) is one with arsenic in it—MSMA. MSMA is approved for cotton fields, not fields for food; although cotton and soybeans are often rotated in the same field.<sup>10</sup>

The other big way arsenic finds

its way into food is through animal feed. After 2011, one product (Roxarsone) was stopped after inorganic arsenic was found in chicken livers. But the FDA approves three others, stating that there is nothing to worry about.<sup>3</sup> Chicken litter not only is used for fertilizer, but also is added to feed for other animals. While many macrobiotic consumers avoid animal foods, it is of interest to note how and where arsenic is making its way into the food chain.

Looking at other aspects of food production is scary too. Sewage sludge can be applied to fields. Sewage sludge contains all the residues that pass out of homes and building. It contains items from hospitals and industries, and thus can be host to medicines, E. coli bacteria, as well as arsenic and other heavy metals. Under current EPA laws, farmers can apply sludge containing up to 41 kilograms of arsenic per hectare of land.<sup>11</sup>

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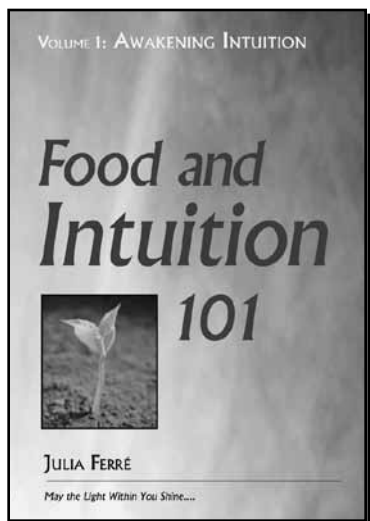
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While the EPA specifies cumulative levels of arsenic in sewage sludge or chicken livers, there are no federal limits of arsenic levels in food. And it is only since 2000 that there is a limit for arsenic in water. Since World War II, the standard for water was 50 ppb, and public water facilities complied. In 2001, due to EPA recommendations and proposals from the National Academy of Sciences, the Clinton administration, right before leaving office, proposed lowering that standard to 10 ppb, and that it would be fully implemented by 2006. When Bush came into office, he wanted to block that change because of the extra costs to many communities to clean up their water. However, not wanting to appear pro-arsenic, he approved the bill, and water levels have thus been established since 2006.<sup>12,13</sup> Some felt it wasn't low enough—New Jersey has its own level set at 5 ppb. The Consumers Union recommends 3 ppb levels for arsenic in juice.<sup>7</sup>

Clearly, there is a need for comprehensive oversight on these issues. The Consumers Union recommends:

“We believe a standard should be made and that will encourage the industry to reduce arsenic levels.

\*EPA should phase out use of pesticides containing arsenic.

\*USDA and EPA should end the use of arsenic-laden manure as fertilizer.

\*FDA should ban the feeding of arsenic-containing drugs and animal by-products to animals.”<sup>7</sup>

### FOURTH, THE RESPONSE

The dangers of arsenic lie in direct exposure, especially to amounts that are too high. The long-term exposure to low-levels amounts of arsenic is unknown. While there is a link between arsenic and liver, bladder and skin cancer, there have not been long-term studies about exposure to arsenic and other diseases.

However, no one wants to eat foods with arsenic in them. And cer-

tain groups are more susceptible; specifically babies and pregnant women. Babies often eat rice as a first food. Since babies are developing so rapidly, the exposure to arsenic at such a young and sensitive age could predispose them to cancers later in life. Here are some ways to reduce arsenic exposure.

1. Consider the source of your rice and other products made from rice. Refer to the full tables from Consumers Reports article; for brands not listed, check where the rice is sourced. Rice grown in Southern United States often has higher amounts than California or imported rice.<sup>9</sup>

2. To reduce arsenic in brown rice,

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*“To reduce arsenic in brown rice, soak rice 4 to 8 hours, then rinse, and add fresh water to cook.”*

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soak rice 4 to 8 hours, then rinse, and add fresh water to cook. Some nutrients are lost, true, but you still gain many benefits from the whole food.

3. Continue to eat a variety of foods and especially sea vegetables. Kombu and wakame are health supporting and are reputed to bind with heavy metals and remove from the body.

4. Continue to strengthen your immune system by eating healthy foods such as miso soup and umeboshi plums. Also avoid those foods that are stressful to the immune system, such as white sugar and refined oils.

5. Eat heirloom foods. If you garden, choose heirloom seeds. Keep biodiversity alive. In this changing world and with the continued rise of corporate businesses, do what you

can to support this effort.

6. If you rely on well water for daily use, have the water tested for arsenic.<sup>14</sup>

7. If you consume any animal foods, be vigilant with the sources.

8. Send a petition to your local representative. Consumers Union has a model you can use.<sup>15</sup>

9. Pay attention when articles appear in reputable sources, and note where they reference their information. There is a lot of scare and hype out there, and some information serves to scare more than inform. Be levelheaded.

10. Support legislation for responsible practices. In California, Proposition 37 (for Labeling GMO food) was defeated in the November 2012 election. There is continued need for mass education.

Last, but not least, maintain as much hope as possible. A number of years ago, I took a trip to Florida, and the store clerk, after looking at my ID, declared, "I would never live in California! The earth quakes scare me." I asked, "Surely the hurricanes are just as bad?" When she replied that most hurricanes are like heavy rainstorms, I had to do a reality check, because most earthquakes are mild, and where I live in Chico (north state, Central Valley), they are rare.

Arsenic has been in rice a long time. It is in a lot of other foods too. We can be scared and we can be ill prepared. Or, we can be prepared, and weather whatever conditions come our way.

## FOOTNOTES

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15. See <[consumersunion.org/arsenic](http://consumersunion.org/arsenic)> or <[notinmyfood.org](http://notinmyfood.org)>

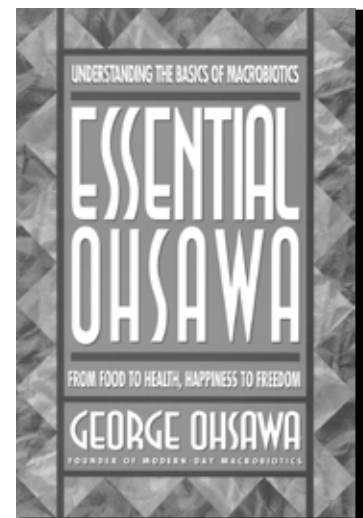
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