

Arsenic Opinion Letter

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Arsenic in the inorganic form is more toxic than its counter organic arsenic and as such the EPA had determined that 0.01 ppm is the allowable tolerance in drinking water (assuming that you are drinking 8 liters of water or equivalent per day). The US FDA has no existing tolerances on arsenic in foods but the World Health Organization, the UK and Australia have 1.0 ppm as their standard in rice and other foods plus have 0.01 ppm as their standard in water. Typically the US FDA would add a 10X multiplier to a water tolerance when converting to foods as an interim standard, as we consume 10x more water than foods on a daily basis. For inorganic arsenic, the FDA is considering 0.023 ppm as the proposed standard for juice (not dried product, which would have a much higher allowable level). Organic arsenic is 500 times less toxic than inorganic arsenic. Many foods contain primarily organic arsenic such as seafood 1.3 to 30 ppm, or rice at 0.1 to 0.5 ppm.

The total amount of arsenic you take in from food like grains, vegetables, and seafood is generally about 50 micrograms (1 microgram equals one-millionth of a gram) each day. The level of inorganic arsenic (the form of most concern) you take in from these sources is generally about 3.5 microgram/day.

Recently there have been articles from Dartmouth College correlating rice as a source of arsenic, as being expressed in the urine of females. The study, while discussing **inorganic** arsenic actually conducted tests for **total** (inorganic + organic) arsenic. Plus the diets of these same females contain seafood, rice and water, and there was no mention of the contribution of arsenic from the seafood in their diet. Therefore, the conclusion that rice was the primary source of inorganic arsenic is not supported.

The testing that we have performed for Axiom Foods for heavy metals includes total arsenic. Our ranges were from 0.002 to 0.56 with a mean of 0.097 ppm (0.903 ppm **below** the standard tolerance set by the World Health Organization, the UK and Australia). To further analyze what this number means, we will be running a comparison of total arsenic using ICP MS and separating the organic from the inorganic arsenic using Ion + ICP MS, IC- ICP MS. This will determine the concentration of the two primary isotopes of organic vs. the two primary isotopes of inorganic arsenic.