



Healthful Ingredients Where
Nature & Technology Meet

Axiom Foods' Heavy Metals Management Program

The subject of lowering heavy metals in plant-based foods has been a key initiative addressed by Axiom Foods since Oryzatein® brown rice protein was first USDA organic certified in 2009. Taking pride in setting each new bar in the brown rice protein industry since its inception, Axiom Foods team of specialists in agriculture, nutrition, and food/beverage formulation and production continue to act rapidly upon any new information.

Below you will find general facts plus information about the latest topics on which we are dedicated to researching and taking action.

Heavy Metals in Axiom Foods Ingredients:

- Axiom's ingredients are safe and meet standard levels set by organizations including:
 - World Health Organization (WHO)
 - CA Prop 65 Safe Harbor Levels
 - US FDA
 - European Union
 - Canadian Natural Health Products Directorate
- Axiom has spent millions of dollars researching and developing procedures for creating continuously lower-levels of naturally occurring heavy metals in plant-based products and prides itself on offering some of the lowest levels possible with current technology that still maintains a natural product.
- Axiom Foods is committed to meeting the lowest levels naturally possible by 2015 and reporting progress via our Heavy Metals Management Program updates.

NEW INFORMATION UPDATED 3-11

Subject: Tungsten

As no manufacturers or regulating bodies had been testing for tungsten, we have only just recently become aware of raised concerns regarding tungsten and have put significant resources toward implementing testing procedures, researching recommended levels vs affects, and methods of reduction in plant-based products. Initial investigations with the help of 3rd party scientists appear to confirm that tungsten levels in our products are naturally occurring and not due to industrial pollution due to the pristine crop locations nowhere within thousands of kilometers of manufacturing or disposal facilities, plus the fact that levels would be significantly higher if due to pollution. Based on our research the following is what we found and have confirmed:

- Tungsten is a naturally occurring metal. Concentrations of tungsten in soil may range from less than 1 ppm to 83 ppm (Agency for Toxic Substances and Disease Registry [ATSDR], 2005).
- Tungsten has not been classified by USEPA as a carcinogenic chemical.

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- Tungsten is not considered a “heavy metal” and USEPA has not developed toxicity criteria for this chemical yet, indicating that this chemical is not a high regulatory priority for USEPA.
- The United States Food and Drug Administration (FDA) has indicated that when tungsten is detected as an elemental impurity in pharmaceutical products it does not need to be subjected to a health risk assessment due its “low inherent toxicity” (FDA, 2013).

When testing multiple batches of our products with accredited labs, we did find a larger amount of tungsten in one batch of rice protein only, but otherwise found only small amounts of tungsten in our rice protein powders. Out of concern for our customers and our concern for safety as a whole, we had a toxicity study performed based on the highest levels of tungsten found in our rice protein drinks. The results of the study performed on our Rice Protein showed that even at the maximum level of tungsten found in our products, they are safe for daily consumption and will not cause any harmful effects. This study used data from the Agency for Toxic Substances and Disease Registry and used the No Observed Adverse Effect Level for tungsten based off the (Schroeder and Mitchener, 1975) study of tungsten in drinking water. This study was based on an uncertainty factor of 100 times or more in magnitude so we are very confident our rice proteins are not a risk to safety.

Although we know our rice protein is safe for consumption based on our toxicity study, we are continuing to test and look into better sourcing.

Resources:

ATSDR. 2005. Toxicological Profile for Tungsten. Center for Disease Control and Prevention. Atlanta.

FDA. 2013. International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use. Draft Consensus Guideline. Guideline for Elemental Impurities. Q3D. July 26, 2013.

Schroeder, H.A. and M. Mitchener. 1975. Life-term studies in rats: Effects of aluminum, barium, beryllium, and tungsten. *Journal of Nutrition* 105: 421-427

Heavy Metals in Plant-Based Foods:

- Heavy metals have been part of Earth's soil, water and air since it was formed millions of years ago.
- All plants grown in the ground have some level of naturally occurring heavy metals. Rice, in addition to plants such as spinach, collard greens, sunflower seeds, spices, etc., tend to have more than some other plants, often due to the amount of water that is absorbed during the growing cycle.
- Vegetarians and especially vegans are clinically shown to have higher heavy metal levels in their bodies due to a 100% plant-based diet. Vegetarians and vegans have also been associated with longer lives than non-vegetarians.
- The amount of heavy metals in plant-based foods can be reduced in the following ways, all of which are employed by Axiom Foods:
 - Sourcing:
 - Identifying ideal geological areas that inherently have less naturally occurring heavy metals (i.e. heavy metals can be higher in

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- Pakistan due to higher levels of historical volcanic activity). Tests can show that levels change over time and thus new sources need to constantly be at hand.
- Growing certified organic crops in pristine, unpolluted regions
 - Testing:
 - Continuously testing product in accredited labs, utilizing the newest and most reliable standards, providing those tests to all Axiom customers and making changes when test results and industry knowledge changes.
 - Processing:
 - Developing new procedures and technology for limiting heavy metals at every stage possible, while maintaining natural status.
 - Errors can occur in testing due to human-error or lab equipment. When testing near the detection limits of certain metals such as these, results can vary by 50%. When testing near the detection limits of certain metals such as these, results can vary by 50%. . The amounts similar to taking a cube of sugar, chopping it into 1,000 pieces, taking one of those pieces and then chopping it into 1,000 more pieces, and then testing that final piece.
 - The amount of heavy metals one ingests is not indicative of is the amount that is retained as the body is a natural filter. Absorption are retention are dependent upon various health factors and level of nutrition, as many foods act as natural antioxidants, and “detoxifiers” helping further offset any effects of heavy metals.
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- Heavy metals are best interpreted when reported as parts per million (ppm):
 - This ensures that numbers are being compared apples-to-apples, since this is the measurement used by most standards including CA Prop 65.
 - There is no unnecessary fear when lay people see other forms of measurement, such as parts per billion (ppb) where the decimal point is moved 3 places to the right. For example, when comparing a product with 5ppm to another product with 0ppm, it is not necessary to report that as 5,000ppb when that is not how most standards are reported and need to be compared to.

Consumer Education:

We believe consumers can make better decisions for their well-being by having a well-rounded education about the positives AND negatives and how to understand scientifically supported apples-to-apples information.

Axiom Foods is not only about business-to-business communication but as an industry

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leader is also about consumer education – advancing the worldwide consumer awareness of plant based ingredients that rival animal-based alternatives. Current programs include:

- Internationally distributed press releases to both general and niched media contacts.
- National consumer media tour and online education program featuring experts including Dr. Janet (www.drjanet.com)
- Online educational material for public accessing
- General educational articles and research available for sharing which can be found on www.axiomfoods.com studies and news pages.

We are proud that Axiom Foods is the company which:

- Introduced the first organic, melamine-free, hexane-free, EU-certified rice protein and when NOT ONE OTHER MANUFACTURER WAS EVEN ATTEMPTING TO MEET THESE STANDARDS.
- Continues to develop new sources, testing, research and technologies in order to continuously improve our ingredients, setting new bars as the industry evolves and information becomes known.
- The FDA trusts, after hundreds of approved inspections, to not only have the only special status for more rapid plant protein approvals but to also be on track to being the first GRAS certified rice protein, followed by the US Pharmacopeia monographed standard.

The NSF has asked to be the first rice protein certified for sport.

- The only source for brown rice protein with third party clinical trial information and claims.
- A founding member of the World Rice Alliance, which enables Axiom Foods to constantly access new rice sources worldwide.
- Is helping 100s of millions of restricted consumers worldwide find allergen-friendly, all-inclusive plant-based alternatives that nourish their body.

Is helping cross over natural plant-based ingredients for mass market acceptance.

Please check back regularly to www.AxiomFoods.com home page news section for links to educational articles related to heavy metals in plant-based foods, as new information is researched and posted.

Please direct questions as follows.

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Finished Consumer Products	Please contact that manufacturer directly, as Axiom Foods only provides ingredients and does not manufacture their finished product.		