

What is the difference between organic and inorganic arsenic?

When determining arsenic content of foods or beverages it is important to distinguish between the forms of arsenic. "Total arsenic count" can be misleading, as one must always pay attention to the type that matters most.

Atoms of arsenic can combine with atoms of other elements to form a variety of compounds. These can be divided into two categories, "inorganic" and "organic". In our case the term "organic" is used in its proper chemical sense, referring to molecules that have a framework of carbon atoms (humic acid). The peat is carbon.

In an "organic" arsenic compound, the arsenic atom is attached to a carbon that may, for example, be part of a sugar molecule such as ribose. This "organic" variety is more complicated in structure, as the molecule of humic acid is complicated but it is HARMLESS.

"Inorganic" arsenic compounds, on the other hand, do not contain carbon and are generally simple molecules, such as arsenic trioxide. These compounds are highly toxic and are found in your drinking water.

Both sources are naturally occurring minerals, with arsenopyrite and realgar and orpiment being examples. As these erode, they react with moisture and oxygen to form arsenides and arsenates that are water soluble and consequently end up in both surface and ground water.

Fish and other forms of marine life feed on these algae and concentrate the arsenic compounds. However due to relatively low toxicity of organic arsenicals, there is not much worry about arsenic in seafood. Rice on the other hand, presents a different story. It grows in flooded paddles where the water can harbour inorganic arsenicals that are readily absorbed into growing plants and are passed into the grain. The amount of arsenic that ends up in rice depends on the local geology.

Obviously, when determining arsenic content in foods, it is important to distinguish between the forms of arsenic. "Total arsenic counts" can be misleading, as was demonstrated by the concern over apple juice, when results revealed on the DR Oz show seemed to indicate unacceptable high levels of arsenic, panicking young moms. We are having the same reaction with some concerned BP and customers.

Furthermore, we have a recent research that shows that fulvic/humic acid has chelation properties that eliminate inorganic arsenic out of the body. The study shows a constant reduction of these heavy metals among others in the same study.

Reference: Dr Joe Schwarcz 30 August 2018