

Questions & Answers: Apple Juice and Arsenic

What is arsenic?

Arsenic is present in the environment as a naturally occurring substance or as a result of contamination from human activity. It is found in water, air, food and soil in organic and inorganic forms.



There are two types of arsenic: organic and inorganic. The inorganic forms of arsenic are the harmful forms, while the organic forms of arsenic are essentially harmless. Because both forms of arsenic have been found in soil and ground water, small amounts may be found in certain food and beverage products, including fruit juices and juice concentrates.

What type of arsenic has been found to be in fruit juices?

Organic and inorganic forms of arsenic have both been found in juices.

Is one type of arsenic more harmful than the other?

Yes. The inorganic forms of arsenic are the harmful forms, while the organic forms of arsenic are essentially harmless.

Are apple and other fruit juices safe to drink?

Yes. The U.S. Food and Drug Administration (FDA) has been testing for arsenic in apple juice and other fruit juices for several years as part of FDA programs that look for harmful substances in food. There is currently no evidence to suggest a public health risk from fruit juices, including apple juice.

Why is arsenic being found in fruit juices?

Organic and inorganic forms of arsenic can be found in soil and ground water, and as a result, small amounts may be found in certain food and beverage products.

Arsenic-based pesticides were commonly used in United States agricultural production up until 1970, when more effective substances became available. As a result, trace levels of organic and inorganic forms of arsenic can be detected in some agricultural settings, which may lead to small amounts of arsenic in certain foods and beverages.

Can consumers choose apple juice with less arsenic by looking at where it is made?

The juice sold by any one company can be made from concentrate that is literally sourced throughout the world, including U.S. domestic sources. For example, Asia and South America are major suppliers of apple juice concentrate. Even if a company buys concentrate from only one supplier in a country, such as Argentina, that supplier may be getting juice from a dozen or more different farms within Argentina. If you test enough juice from such a supplier, you will find some lots with higher amounts of arsenic than others. This could be due to different amounts of arsenic in orchard soils.

Testing a small number of samples of different brands of juice only provides a snapshot in time of how much arsenic was in a particular lot of juice. Without a long term survey of many lots of juice from different companies, there is not sufficient data to say one company has lower amounts of arsenic in its juice than any other company. Based on data collected by the FDA over many years, there is no evidence that juice on the market in the U.S. presents a public health risk from arsenic.

Does organic apple juice have less arsenic than non-organic apple juice?

The FDA is unaware of any data that shows that organic juice tends to have less arsenic than non-organic apple juice. Even organic apples come from trees that grow in soil that may contain arsenic. The FDA is not aware of any data on arsenic in organic juice vs. non-organic juice.

Has FDA set a standard for arsenic in fruit juice?

No. Available scientific evidence indicates that if arsenic occurs, it almost always does so at very low levels.

Has FDA set a standard for arsenic in bottled water?

Yes. The maximum level of arsenic allowed in bottled water is 10 micrograms in one liter of bottled water or 10 parts per billion (ppb).

Why is there a standard for arsenic in bottled water but not in fruit juice?

UPDATED 09/28/2011

The FDA established a standard for arsenic in bottled water in response to EPA's establishment of a standard for arsenic in drinking water, as required by the Safe Drinking Water Act. There is clear evidence that inorganic arsenic is a public health problem in some water supplies, and this is why the EPA has established a drinking water standard. FDA's position is that similar evidence of a risk to public health does not exist for apple juice. Unlike drinking water, the levels routinely found in apple juice are either not detectable or occur at very low levels.

What does the FDA look for when testing juice for arsenic? **NEW**

The FDA first tests the juice sample for total arsenic to see if the levels are too high. When test results show total arsenic levels are too high, the FDA re-tests the sample for its inorganic arsenic content, the type of arsenic considered harmful to humans. Some scientific studies have shown that two forms of organic arsenic found in apple juice could also be harmful, and because of this, the FDA counts these two forms of organic arsenic in with the overall content for inorganic arsenic. Moreover, they occur at extremely low levels, adding less than 1% to the total low levels of inorganic arsenic found in apple juice. As the FDA has confirmed, these extremely small amounts do not present a risk to public health.

What is the FDA doing to protect the public against arsenic in fruit juice?

The FDA collects and tests for arsenic, including inorganic arsenic, in fruit juices and fruit juice concentrates made in the U.S. as part of FDA programs that look for harmful substances in food. The FDA considers test results for inorganic arsenic on a case-by-case basis, and takes regulatory action as appropriate.

The FDA also currently has an Import Alert for surveillance of arsenic, including inorganic arsenic, in fruit juices and fruit juice concentrates. An Import Alert is a measure used by FDA to keep potentially dangerous products out of the U.S.

I have heard reports of test results showing high levels of arsenic in apple juice products. What advice would FDA give consumers based on this information?

Unless we can determine that the test methods used were for inorganic arsenic and that the method was accurate and properly performed, we are not able to specifically address the test results. It is important to remember that test results for total arsenic do not distinguish between the essentially harmless organic forms of arsenic and the harmful inorganic forms of arsenic. It would be inappropriate to draw conclusions about the safety of a product based on the total arsenic level.

Does the FDA have a response to the information recently reported on the Dr. Oz Show?
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The FDA is aware of the episode of the Dr. Oz Show that aired on September 14, 2011, where test results for arsenic in apple juice were discussed. The FDA has reviewed the test results performed by EMSL Analytical, Inc., on behalf of the Dr. Oz Show, and we can confirm that the results that were revealed are for total arsenic. The results do not distinguish between the essentially harmless organic forms of arsenic and the harmful inorganic forms of arsenic. Therefore, these results cannot be used to determine whether there is an unsafe amount of arsenic in the juice tested by the Dr. Oz Show.

Did the FDA test any of the samples tested by the Dr. Oz Show?

On September 10-11, 2011, the FDA completed laboratory analysis of the same lot of Gerber apple juice that was tested by the Dr. Oz. Show, as well as several other lots produced in the same facility. The FDA's testing detected very low levels of total arsenic in all samples tested. These new results were consistent with the FDA's results obtained in the FDA's routine monitoring program and are well below the results reported by the Dr. Oz Show. The FDA has concluded that the very low levels detected during our analysis are not a public health risk and the juice products are safe for consumption.

Where can I go to get more information?

[FDA: Apple Juice is Safe to Drink](#)