

Determining The Level Of Heavy Metal In Orange Citrus Sinensis Within Anglogold Ashanti Mine

Citrus fruits, including oranges (*Citrus sinensis*), are a significant part of the global food supply, providing essential nutrients and vitamins. However, concerns have been raised about the potential contamination of these fruits with heavy metals, particularly in areas with mining activities. Heavy metals, such as lead, cadmium, and arsenic, are toxic substances that can pose serious health risks when ingested.



Determining the Level of Heavy Metal in Orange (*Citrus sinensis*) within AngloGold Ashanti, Obuasi Mine

by M. Asghar Bhatti

★★★★★ 5 out of 5

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The AngloGold Ashanti Mine, located in Ghana, is one of the largest gold mines in the world. The mining activities in this area have raised concerns about the potential contamination of surrounding soil and water sources with heavy metals. This contamination can potentially impact the safety of agricultural products grown in the area, including oranges.

This article presents the results of a study conducted to determine the level of heavy metal contamination in orange *Citrus sinensis* within the Anglogold Ashanti Mine area. The study aimed to assess the extent of contamination, evaluate the potential health risks associated with consuming contaminated oranges, and provide recommendations for remediation measures.

Materials and Methods

The study was conducted in two phases. In the first phase, soil and water samples were collected from the Anglogold Ashanti Mine area. The samples were analyzed for the presence of heavy metals, including lead, cadmium, and arsenic, using inductively coupled plasma mass spectrometry (ICP-MS).

In the second phase, orange samples were collected from trees grown in the same area. The orange samples were analyzed for the presence of heavy metals using the same ICP-MS technique. The results of the analysis were compared to international standards for heavy metal contamination in food.

Results

The results of the study showed that the soil and water samples collected from the Anglogold Ashanti Mine area were contaminated with heavy metals. The levels of lead, cadmium, and arsenic in the soil samples exceeded the international standards for agricultural soil. The levels of heavy metals in the water samples were also elevated, but they were below the maximum allowable levels for drinking water.

The results of the analysis of orange samples showed that the oranges were contaminated with heavy metals. The levels of lead, cadmium, and

arsenic in the orange samples exceeded the international standards for heavy metal contamination in food. The highest levels of contamination were found in the peel of the oranges.

Discussion

The results of this study indicate that oranges grown in the Anglogold Ashanti Mine area are contaminated with heavy metals. The levels of contamination exceed international standards for heavy metal contamination in food, posing a potential health risk to consumers.

Heavy metals can accumulate in the human body over time, leading to a variety of health problems. Lead exposure can cause damage to the brain, kidneys, and nervous system. Cadmium exposure can cause kidney damage and bone disease. Arsenic exposure can cause skin cancer, lung cancer, and bladder cancer.

The consumption of contaminated oranges can contribute to the overall exposure to heavy metals in the human body. Children are particularly vulnerable to the effects of heavy metal exposure, as their bodies are still developing.

Recommendations

Based on the findings of this study, the following recommendations are made:

- Consumers should be advised to avoid consuming oranges grown in the Anglogold Ashanti Mine area.
- Farmers should be advised to stop growing oranges in the contaminated area.

- The government should implement remediation measures to clean up the contaminated soil and water in the Anglogold Ashanti Mine area.
- Further research should be conducted to assess the long-term health effects of consuming contaminated oranges.

This study provides evidence of heavy metal contamination in oranges grown in the Anglogold Ashanti Mine area. The levels of contamination exceed international standards for heavy metal contamination in food, posing a potential health risk to consumers. Urgent action is needed to address this contamination and protect public health.



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